# Digital Texts for Shared Reading:

# Effects on Early Literacy.

By

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The research associated with this thesis abides by the international and Australian codes on human experimentation, and the ruling of the Committees of the University of Tasmania. The Tasmanian Social Sciences Human Research Ethics Committee's, ethics reference number for this research is H12006.

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# Conference Presentations and Journal Articles

The following conference presentations, proceedings and published journal articles are directly related to the research contained in this thesis.

## Conference Presentations and Proceedings

McNab, K. (2013). *Bridging the digital divide with iPads: Effects on early literacy.* Paper presented at the International Society for Technology in Education (ISTE2013) conference in San Antonio, Texas, June 2013.

McNab, K. & Fielding-Barnsley, R. (2013). *Digital texts, iPads and families: Effects of shared reading on early literacy development.* Presentation at the Twentieth International Conference on Learning in Rhodes, Greece, July 2013.

McNab, K. (2014). We read, we share, we learn: *Assisting families to support their children's literacy development.* Presentation at the Inclusive Learning Technologies Conference (ILTC2014) in Broadbeach, Queensland, May 2014.

## Published Articles

McNab, K. & Fielding-Barnsley, R. (2014). Digital texts, iPads, and families: An examination of families' shared reading behaviours. *International Journal of Learning: Annual Review, 20,* 53-62. Published online: August 1, 2014.

The Digital texts, iPads and families article was selected as the winner of the International Award for Excellence for Volume 20 of The Learner Collection. It was selected for the award from among the ten highest-ranked papers.

# Abstract

Seminal and contemporary research demonstrates that emergent literacy skills are extremely important in establishing positive education trajectories. Digital reading capabilities such as those afforded by iPads and other tablet devices may play an important role in developing early reading skills, particularly if families are empowered to exploit the unique features of digital texts to support their children's literacy development. Digital reading on iPads provides an alternative to reading traditional print texts, and for some children a preferred method of learning to read and enjoy books.

This study has focussed on an examination of the effects of a one-to-one digital book reading intervention on children's early literacy development and families' shared reading practices. Further, the lived experience of the children reading digital texts, as conveyed by their parents, and the effects of these reading behaviours on the children's literacy development was of particular interest. The research examined if and how children and parents used the interactive features in the digital books to support children's literacy development. Three main areas of interest were examined: how parents in low socio-economic status schools were using digital books with their children; the effects of reading digital texts on young children's early literacy development; and the effects of facilitating a two-way knowledge exchange group for parents.

The study involved three distinct phases and two schools. Phase one involved a survey designed to gather baseline data about children's shared and independent reading practices and families' ownership of digital technologies to support reading. Phase two, the pilot study, involved 24 families from the same two primary schools situated in low socio-economic areas of Tasmania. Families from one school formed the intervention group and read digital books on iPads. Families from the second school formed the comparison group and read the same books in traditional paper-text based formats. Children were assessed pre-intervention (T1) and six weeks later at post-intervention (T2) against a battery of standardised literacy tests. A receptive vocabulary instrument designed by the researcher, McNab Picture Vocabulary Test [MPVT] Form 1, (McNab, 2012) was administered to test topical vocabulary from the texts employed in the intervention.

The phase two results showed that the digital reading group made similar and significant progress to the comparison group on measures of receptive vocabulary, expressive vocabulary, phonological abilities and concepts about print. This finding supports the case that the use of digital books by themselves does not disadvantage or advantage children's early reading development. The parent interview information identified that the parents still needed direction on how to effectively use the digital features of the e-books particularly in terms of having the children read along with the text. Parents also need to be aware that that there is still an important role for them to share the e-book reading experience with their children and to continue to explore and review the e-text.

Phase three involved eight families from one of the schools. All families received digital books on iPads to read with their children. Families participated in two-way knowledge exchange sessions where they were given opportunities to discuss with the researcher and other participants their experience of reading digital books on iPads. Families also received information about dialogic reading and the mechanics of reading digital books on iPads. Children's literacy development was assessed pre- (T1) and post-intervention (T5) and monitored during the ten-week intervention (T2, T3 and T4). The phase three results also demonstrated that the children made significant gains on measures of receptive vocabulary, expressive vocabulary, phonological abilities and concepts about print. The two-way knowledge exchange sessions between the researcher and with the parents had a positive influence on the parents' perceptions of the digital shared reading intervention.

The overall findings from this study have application to home and school support early reading programmes. Digital books do have a place in children's early reading development but they need to be seen as a component and not as a replacement for the parent and the teacher dialogue with the child around the shared book reading experience. The families in this study appreciated and benefited from the two-way knowledge exchange and they reported that they were more confident about using the special features of digital books and more confident about their role in the shared book activities and experiences with their children.

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# Chapter 1 Introduction

*Few children learn to love books by themselves. Someone has to lure them into the wonderful world of the written word; someone has to show them the way.*

(Prescott, 1965)

The importance of involving parents in their children's education and building effective and sustainable home-school partnerships is reflected in national curriculum, policy and funding documents, both in Australia and internationally (Australian Department of Education Employment and Workplace Relations & Council of Australian Governments, 2009; Department for Education, 2011; Department of Education Employment and Workplace Relations, 2008; Gonski et al., December 2011; Ministerial Council on Education Employment Training and Youth Affairs, 2008; "NCLB," 2002). In 2014, data from the ABS Census of Population and Housing was integrated with Tasmanian Australian Early Development Census (AEDC) data and National Early Childhood Education and Care Collection, as well as Tasmanian government school enrolments and National Assessment Program – Literacy and Numeracy (NAPLAN) data, "to enhance the evidence base about the socioeconomic context of early childhood development and student achievement" (Australian Bureau of Statistics, 2014, p. 1). Socio-economic status was identified as having a significant effect on a child's developmental vulnerability, as was parent engagement. The regularity in which parents read to their children and encouraged reading in the home and the level of parental engagement with a child's learning and their school were strong and consistently significant factors influencing early childhood development in Tasmania. Importantly, "higher levels of parental engagement and reading to a child very regularly were protective factors against developmental vulnerability, while lower engagement and less regular reading were risk factors of developmental vulnerability" (p.1). Initiatives such as Launching into Learning and Learning In Families Together were designed to address developmental vulnerability and educational disadvantage.

The Launching into Learning programme in Tasmania recognises that "parents are their children's first, ongoing and often most influential teachers" (Department of Education, 2011, p. 2). The programme operates in primary schools across the state and provides parents with the skills to support their children's educational development. In Tasmania, it is evident that

approximately 25% of students entering Prep and 15% of students entering Grade One do not meet the required literacy benchmarks (Department of Education, 2011). In 2011, 25% of Tasmanian Kindergarten students did not achieve the expected outcomes on the Kindergarten Development Check measurements of readiness for school (Department of Education, 2011). In the same year, proportionally fewer students who participated in the Launching into Learning (LiL) programme were identified as At Risk compared to children not participating in LiL (Education Performance Services, 2013) on the same measures. Furthermore, 15% of Prep students did not achieve the expected outcomes on the Performance Indicators in Primary Schools measures of early literacy (Department of Education, 2011). Children who regularly attended LIL in 2011 outperformed children who did not regularly participate in LIL on the PIPS measures of reading.

The Tasmanian Government recently announced they are investing $17.75 million in a school and family partnerships in education programme targeting 4-8 year olds and their families. The Learning In Families Together (LIFT) programme, catering for children in Kindergarten to Grade Two, is informed by an 'understanding that active, engaged parents have a significant impact on increasing learning and development outcomes for children' (Department of Education, 2015a, p. 1).

Seminal and contemporary research demonstrates that parental involvement has a positive effect on reading acquisition; however, whilst much is known about parents sharing traditional print books with their young children (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Blom-Hoffman, O'Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2007; Fielding-Barnsley & Purdey, 2002; Fielding-Barnsley & Purdie, 2003; Hay & Fielding-Barnsley, 2007; Whitehurst et al., 1994), little is known about the effects of parents sharing digital texts with them (Parish-Morris, Mahajan, Hirsh-Pasek, Golinkoff, & Collins, 2013). In this current study, traditional print books refer to paperback and hardback printed books. Digital texts, or e-books as they are commonly known, refer to digital books that may include audio, visual or multimodal content produced through digital or electronic technology. They may contain interactive features and highlighted text, and include animations and/or hyperlinks (ACARA, 2014). Digital texts can be accessed on DVD players, computers, online or on mobile media devices such as iPads, Android or Windows tablets.

Over the past four years, there has been a wave of debates, both locally and internationally, about the value of schools investing funds in one-to-one mobile media device initiatives. The tides are changing, however, and the conversation has moved on. Rather than debating whether or not to invest in mobile media device technologies such as iPads and other tablet devices, many schools are seeking information about the best ways to implement such devices into their curriculums and routines. The 2009 PISA digital reading literacy assessment assessed "15-year-old students' ability to read, understand and apply digital texts" (Thomson & De Bortoli, 2012, p. i). Comparisons of Australian students' performance in digital reading literacy revealed that Tasmanian students scored significantly lower on average than the other states, except Northern Territory which was statistically similar. Students from Tasmania and Northern Territory also scored significantly lower on print literacy than the other Australian states. Across Australia, students in the higher socioeconomic quartiles achieved significantly higher scores than students in lower socioeconomic quartiles on digital reading literacy. The Tasmanian Department of Education's eStrategy has a focus on "digital learning through the curriculum and the digital resources that support the delivery of effective and engaging learning programs" (Department of Education, 2014, p. 7) and are committed to providing "safe and secure access to a range of innovative digital learning resources and experiences anywhere, anytime" (p. 5). The Tasmanian Department of Education (2013) also recognises the importance of partnering with parents and carers, and supporting them as key partners and stakeholders within educational programmes. Involving families in school digital technologies initiatives is one way that schools can foster the important relationship between home and school. Providing families with access to digital media devices and digital books can have positive effects for children and their families. Research into computer-assisted learning employing digital hand held tablet devices is relatively new, particularly with regard to one-to-one implementation in schools in low socio-economic populations. Takeuchi and Stevens (2011) asserted that family and digital media research is limited and "the bias has been toward the study of middle-class families" leaving an "incomplete picture of other families, including lower income families" (p. 55). Arguments for and against using digital technologies with young children and their families and the best ways to use them seem futile in the absence of cumulative and robust research findings. Studies that provide a deeper understanding into the digital media experiences of a variety of families are required. This research aims to contribute to this

growing body of knowledge by providing a deeper understanding of the digital media experiences of the young participants and their families in this study.

**Overview of the Research**

In this three phase study, children from two lower SES primary schools in Tasmania were provided with digital and printed children's picture books to read with their families in their home environments. The questions guiding the research project were:

1. Are parents of children in low SES schools using electronic books as a shared reading device with their young children?
2. How are parents using digital books with their children?
3. What are the effects of reading digital texts on young children's early literacy development and does this differ from traditional reading practices?
4. What are parents' perceptions of the digital shared reading intervention?
5. How can the benefits of the digital shared reading intervention be maximised?

Phase one employed a demographic and family literacy survey designed to collect data on children's shared and independent digital and traditional print reading experiences in the home in order to answer question one. In phase two, children were assigned to one of two treatment conditions: a comparison group who read print paper based books and a digital reading group who read digital books on iPads. The findings of phase two were used to answer questions two and three. Two-way knowledge exchange community sharing sessions were introduced for parents during phase three to see if the effects of the digital shared reading intervention could be improved, in terms of children's literacy development and parents' experiences of using iPads with their children and answer questions two, three, four and five.

These five questions were investigated using a mixed methods research design involving children in grades Pre-Kinder to Grade 2 and their families. The study is presented in ten chapters.

**Outline of Chapters**

In this thesis, Chapter Two provides a review of the seminal and contemporary research domains that inform this study: socio-cultural view of development; literacy as a predictor of

later social and academic success; parents as partners; effects of socio-economic status on literacy outcomes and access to educational materials; process of learning to read; shared and dialogic reading; technology in the early years; the Matthew Effects where the good readers get better and the poor readers show little improvement; the summer slide of reading performance where away from school for holidays reduce the reading performance of some children; and the selection of children's books. Chapter Three provides background information and an overview of the three phase project, details and justifies the ethical implications, methodological and theoretical frameworks, research design, participant and sampling techniques, data collection and analysis stages, and assessment methods and tools employed to address the aims of this inquiry into the effects of a one-to-one digital book reading initiative on young children's early literacy practices and development. Chapter Four presents the methodology for phase one and Chapter Five presents the results. Similarly, Chapter Six presents the methodology for phase two and Chapter Seven presents the results. Chapters Eight and Nine present the phase three methodology and results respectively. The thesis concludes with Chapter Ten. The final chapter provides a discussion of the findings of all three phases and the implications of the findings for educational practice and future research.

# Chapter 2 Literature Review

This chapter aims to present the relevant research literature that underpins this study of families' digital and traditional reading practices and the effects of home-school literacy programmes and partnerships on families' shared reading experiences and young children's early reading development. Initially, the chapter will provide background information on the social constructivist theory of literacy development and discuss the history of the seminal and contemporary research domains that inform this study. A discussion regarding reading and the process of learning to read will be presented with a focus on vocabulary, phonological awareness, and concepts about print. Factors impacting on young children's literacy development will be discussed, particularly with regard to home and school relationships, socio-economic status (SES), and barriers to parent involvement. Finally, the relevance of this information to the current study will be established and the impetus for this study will be explained.

## Social Constructivist Theory of Learning

This study is located within the literature that acknowledges the social constructivist theory of learning and development (Vygotsky, 1978). Vygotsky believed that whilst learning takes place within a person's mind, it also takes place through active learning in social contexts, and as such is both internal and external. A social constructivist view of literacy development recognises the social and cultural contexts in which knowledge and understandings are transmitted and developed and thus acknowledges the influence of culture, ethnicity, social class, gender, and relationships on literacy learning (Dugdale & Clark, 2008; Green & Campbell, 2003; Hannon, 1995). Literacy and learning are socially constructed by adults and children as part of their everyday life experiences (Luke, 1993; Unsworth, 1993). Whilst this study is based on the premise that literacy learning is fundamentally a social process it must also recognise that literacy is constructive of individuals' everyday life. Reading and literacy development have the power to change lives through increased life chances (Dugdale & Clark, 2008).

What counts as reading is constructed socially by families and schools as they provide access to, and interact with, various text types. Traditionally, schools have provided families with print texts; however, with advances in technology it is now possible for schools to provide digital texts on mobile media devices such as iPads. Buckleitner (2014) argued that

"Vygotsky's concept of the 'zone of proximal development' is a useful idea for interactive media developers" (p. 62) as technology enables them to construct help mechanisms that support children with their learning. The Zone of Proximal Development refers to the distance between what a child can achieve on their own and what they can achieve with support from an adult or more capable other. Today, evidence of social constructivism can be found in interactive digital texts that enable children to listen to pre-recorded narrations by teachers, family members or friends. This audio feature supports the child to read texts they would not normally be able to read on their own.

**Literacy Has the Power to Change Lives**

The choices families and schools make and the experiences they provide have the power to influence the kinds of readers children become, for as Unsworth and O'Toole (1994) asserted, "what children learn about reading and through reading are completely interconnected and are determined by the texts they have access to and the social contexts in which those texts are encountered" (p. 18). Literacy education is more than educating children to read and write, for as Luke (1993) argued "literacy education is about the distribution of knowledge and power" (p. 4) and the decisions made about children's access to educational materials and opportunities to develop different types of literate competence can significantly affect their current lives and future life chances. A significant body of research has explored the effects of early literacy instruction on later academic success (National Early Literacy Panel, 2008).

A study conducted by the National Literacy Trust revealed that literacy is not only about reading and writing ability; literacy has the power to impact on an individual's personal and social life (Dugdale & Clark, 2008). The study drew on existing longitudinal studies, which have tracked participants from birth, to examine the long-term effects of literacy acquisition on people's lives. It focused on individuals' aspirations, family life, and health as well as their economic well-being and civic and cultural engagement. Analysis of the data revealed that individuals with improved literacy levels are more likely to have access to technology, less likely to receive state benefits, more likely to own their own home, and be more involved in democratic processes. In contrast, individuals with poor literacy levels are more likely to be unemployed, less likely to have children, more likely to reside in overcrowded housing, and less likely to own their own home. Early reading failure and low literacy levels have also

been associated with later social exclusion (Dugdale & Clark, 2008; Kirsch et al., 2002). Indeed, reading is a skill that is central to learning in all areas of the school curriculum and critical for success in contemporary society (Clay, 2006; Department of Education, 2007; Dugdale & Clark, 2008; Nichols, Rupley, & Rasinski, 2008). The Centre for the Improvement of Early Reading Achievement (CIERA, 2003) acknowledged the significant numbers of children struggling with learning to read in today's schools and the "long term consequences for children's developing self-confidence and motivation to learn" (p. ii) and challenged teachers to assist all children to become successful readers.

**Learning to Read**

Learning to be a successful reader is a complicated process of problem solving (skill development) and meaning making (conceptual development) that requires a complex set of skills and abilities that develop in fluid stages. Winch, et al (2005) defined reading as "a process of literate thinking during which a reader brings meaning to and takes meaning from written text in a social and cultural context" (p. 493). Children learn to read through a process of learning the visible symbols of print and making connections between the symbols and the spoken words (Clay, 2006; Storch & Whitehurst, 2002). Successful readers rely on a complex range of reading strategies, skills and sources of information to interpret texts: semantic cues (including meaning and comprehension), syntactic cues (including structure and concepts about print) and graphophonic cues (connections between sounds and letters or phonological and phonemic awareness). They draw on their prior knowledge of the world around them, their developing vocabulary, understandings of grammar, letters and sounds, and their concepts of print (Snow & Juel, 2007; Storch & Whitehurst, 2002). Building background knowledge is central to the learning to read process as children continually build upon prior knowledge to become successful readers. Without prior knowledge it is difficult to progress and reading development can be hindered.

According to Hoover and Gough's (1990) Simple View of Reading (SVR), reading comprises two sets of skills: decoding and linguistic comprehension. Similarly, Whitehurst and Lonigan (2001) identified two domains that contributed to emergent literacy: inside-out skills (decoded focused) and outside-in skills (language focussed). These simple views do not aim to trivialise the complex nature of learning to read and making meaning from text; rather they suggest that the complex skills required to become a successful reader can be divided into two categories. Nation (2005) maintained that decoding skills are not isolated skills but

include elements of word recognition processing and phonic decoding processing. Nation also maintained that linguistic comprehension skills include spoken vocabulary, as well as syntactic and semantic processing. Decoding and linguistic comprehension are not mutually exclusive as both are required for successful reading experiences. On this point Nation (2005) explained:

> The relationship between decoding and linguistic comprehension is considered to be multiplicative: there can be no reading comprehension without the ability to decipher or recognize words, and similarly, reading comprehension will fail if children lack the linguistic comprehension to understand what it is they have decoded. (Nation, 2005, p. 249)

The Simple View of Reading (SVR) can be a useful model for predicting reading ability of young readers; however, it has been subject to critique (Kirby and Savage, 2008; Uppstad & Solheim, 2011; Wyse & Goswami, 2008). Kirby and Savage (2008) argued that whilst the model is useful for conceptualising the relationship between global linguistic comprehension, decoding and word reading skills, and reading comprehension, it does not provide a comprehensive theory of reading. Reading is not a simple process; rather it is 'one of the most complex achievements of the human brain' (Wyse & Goswami, 2008, p. 706). Kirby and Savage (2008) identified several areas in which they believe the Simple View of Reading is incomplete or worthy of further investigation: how word decoding is conceptualised, how reading comprehension is measured, reading comprehension strategies, the role of reading fluency, reading with illustrations and second-language reading. Furthermore, the Simple View of Reading does not acknowledge the role of engagement and motivation in learning to read.

During the emergent literacy stage, that precedes the more formal reading stage, children develop pre-reading skills that include: concepts about print; vocabulary development; phonological awareness; and decoding strategies (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003) along with developing a motivation to read (National Early Literacy Panel, 2008). Motivation and engagement have been shown to be key factors in developing successful and lifelong readers with Kirsch et al. (2002) claiming that motivation is the key to bridging the gap between good and poor readers. Guthrie and Wigfield (1999) defined motivation as "the individual's goals and beliefs with regard to reading" and point

out that motivation "influences the individual's activities, interactions, and learning with text" (p. 199). Task mastery goals, intrinsic motivation, self-efficacy, personal interest, and transactional beliefs all contribute to children's motivation to read (Dougherty Stahl & McKenna, 2006). Children who are motivated to read, and therefore read frequently, often display better skills and improved vocabulary than children who read less often, due to the circular relationship between practice and achievement (Kirsch et al., 2002). Young readers therefore require abundant opportunities to experience and enjoy books that promote vocabulary and early literacy development in the school and home environments (Shanker & Cockrum, 2009).

**Vocabulary Development**

Vocabulary development begins in infancy and continues throughout life. Children's early vocabulary development, or knowledge of words and word meanings, has long been linked to later literacy outcomes (Butler, Marsh, Sheppard, & Sheppard, 1985; Juel, 2006; Lee, 2011; Pikulski & Tobin, 1989; Sénéchal & LeFevre, 2002; Storch & Whitehurst, 2002). Dougherty et al. (2006) identified vocabulary development as "a complex process that involves establishing relationships between concepts, organisation of concepts and expansion and refinement of knowledge about individual words" (Dougherty et al., 2006, p. 218). According to Nation, Snowling, and Clarke (2007) the close relationship between vocabulary knowledge and reading ability can be interpreted in at least three possible ways. The three explanations can be viewed in terms of 'Matthew Effects' (Stanovich, 1986), a metaphor for cumulative advantage. Children gain more from literacy learning experiences because they have a stronger foundation on which to build upon (Korat, Shamir, & Arbiv, 2011; Nicholson & Dymock, 2011). First, better readers who read frequently are exposed to more words in context and will develop larger vocabularies over time (National Institute of Child Health and Human Development, 2000), whereas poorer readers who read less will have fewer opportunities to develop vocabulary. Second, comprehension is inhibited by limited word knowledge. Children with limited vocabularies or children who have difficulty accessing word meanings accurately and efficiently are less likely to understand what they are reading. Third, reading ability and vocabulary knowledge may be closely related because they both require connections between semantics and phonological awareness (Nation et al., 2007).

Children's vocabulary develops as they experience the world around them, engage with a wide range of texts and text types, and receive rich vocabulary instruction. Rich vocabulary instruction involves opportunities for children to engage in activities that require deep processing and use words in meaningful ways, rather than the traditional method of learning lists of words and their meanings (Song et al., 2015). Listening to repeated readings of stories also assists children's vocabulary development (National Institute of Child Health and Human Development, 2000; Robbins & Ehri, 1994). As it has been found that children require at least twelve encounters with new words in a variety of meaningful contexts (McKeown, Beck, Omanson, & Pople, 1985; Nagy & Scott, 2006) to increase comprehension, repeated readings of books together with meaningful conversations that activate prior knowledge and make connections with children's own experience lead to increased vocabulary development. It is important to create as many opportunities as possible to activate schema and make connections between familiar and unknown words particularly during shared book readings. Opportunities such as this encourage depth of processing which has been shown to increase comprehension (Woolley, 2011; Stahl & Fairbanks, 1986). Rich vocabulary instruction has the potential to improve children's phonemic awareness, fluency and development of sight words and comprehension (Farstrup & Samuels, 2002; Song et al., 2015). As children develop their vocabulary they are building knowledge about the world around them and this knowledge is fundamental to later reading success. Conversely, children who experience slow vocabulary development may also experience "deficits in phonological awareness" (Hay & Fielding-Barnsley, 2006, p. 117) that may lead to delayed literacy development. Deficits in phonological awareness have implications for future reading success, particularly with regard to fluency, recognition of sight words, and reading comprehension.

**Phonological Awareness, Phonemic Awareness and the Alphabetic Principle**

Phonological awareness, phonemic awareness and the alphabetic principle are important aspects of being able to read and write (Green & Campbell, 2003; Harris, Turbill, Fitzsimmons, & McKenzie, 2006; Hill, 2006). The phonological awareness pattern of development begins as children hear and detect individual words in sentences and progress to the awareness of syllables within words. Phonological awareness refers to broad understandings about the larger units of oral language including words, syllables, onsets and rimes. Children with phonological awareness are able to identify and manipulate these units

of oral language by clapping out syllables in words, creating rhymes and recognising beginning and end sounds in words. Phonemic awareness refers to understandings about phonemes, or the smallest units of oral language. Children with phonemic awareness are able to manipulate the smallest sounds in words such as separating c – a – t in cat, or m – a –th in math. Early in a child's development of word knowledge they begin to understand that letters are associated with sounds. As children develop a working knowledge of the relationship between phonemes (smallest speech sounds) and graphemes (written symbols) they acquire insight into the alphabetic principle (Byrne & Fielding-Barnsley, 1989). When children have insight into the alphabetic principle they understand that words are made up of letters and letters represent sounds (phonemes). They are able to recognise the systematic relationships between written letters and phonemes and spoken words and thus make sense of written and spoken language.

**Concepts about Print**

Concepts about print are essential for beginning readers as they learn to navigate print. Children develop their concepts about print, or understandings about how print works, through exposure to books and explicit instruction. Concepts include knowing that words tell a story, not just the pictures, knowing how to hold a book, where to start reading, which direction to read in, what a word is and what a letter is. Concepts also include knowing about the beginning sounds in words and punctuation (Clay, 1989). Interactions between parents and their children as they share books at home facilitate authentic teaching experiences and can provide valuable opportunities for developing concepts about print.

**Historical and Contemporary Contexts**

Historically, researchers have been examining the links between home experiences and school outcomes since the late 1960s (Chall & Snow, 1982). Heath's (1983) longitudinal study of communities in the Piedmont Carolinas during the 1960s and 1970s investigated the ways in which the white working class people, of the town she referred to as Roadville, and the black working class people, of the town she referred to as Trackton, learned to use language in their homes and communities. Her ethnographic study revealed significant differences in the language values and skills of each of these culturally different communities. Heath found that students whose home and community language learning environments emulated that of the school were more likely to succeed at school. Since this

seminal work was undertaken, there has been a considerable wealth of research that has made connections between home and school experiences and educational outcomes for students (Baker & Scher, 2002; Close, 2001; Marks, 2006; Morgan, Nutbrown, & Hannon, 2009; Nichols et al., 2008; Senechal, 2006; Whitehurst et al., 1994). A focus of contemporary research into educational outcomes for students has been the notion that the most significant resource for school learning is the experience of reading in the home. Shared book reading in the home provides a crucial environment for the acquisition of pre-literacy skills (Arnold et al., 1994), particularly during the emergent literacy stage.

**Parents as Partners**

The importance of involving parents in their children's education and building effective and sustainable home-school partnerships is reflected in national curriculum and policy documents, both in Australia and internationally. In Australia, the Family-School Partnerships Framework (Department of Education Employment and Workplace Relations, 2008), the Melbourne Declaration on Educational Goals for Young Australians (Ministerial Council on Education Employment Training and Youth Affairs, 2008), and the Early Years Learning Framework for Australia (Australian Department of Education Employment and Workplace Relations & Council of Australian Governments, 2009) all value parents' contributions to children's development and learning and encourage schools to foster home-school partnerships and build collaborative relationships between parents, and other family members, and school staff. Furthermore, the Family-School Partnerships Framework recognised the research demonstrating that "family involvement can have a major impact on student learning, regardless of the social or cultural background of the family" and therefore argued that family involvement is "central to high quality education and is part of the core business of schools" (Department of Education, Employment and Workplace Relations, 2008, p. 2). Similarly, in the United States of America the No Child Left Behind Act of 2001 (NCLB, 2002) includes many provisions for making home-school connections and building parents' capacity to participate in their children's education. Moreover, in the United Kingdom, the Framework for the National Curriculum (Department for Education, 2011) is based on best practice as demonstrated in higher performing schools and influenced by the international comparative research review conducted by the Expert Panel. The Framework stresses the value of communication between school and home and identifies parental

engagement in children's learning as one of the ten "salient dimensions that contribute to high expectations for all" (Department for Education, 2011, p. 48).

Inherent in the aforementioned curriculum and policy documents is the understanding that all homes and schools possess rich and extensive 'funds of knowledge' (Moll, Amanti, Neff, & Gonzalez, 1992) and communication is central to the transmission of this knowledge. The transmission of knowledge between home and school can make a positive difference for parents, children and teachers. Furthermore, the transmission of knowledge between parents and children through shared reading can make a significant difference for all children, for as Guernsey, Levine, Chiong, and Severns (2012) argued, "even parents without strong reading skills can make important contributions to their children's cognitive development and later reading success through conversation and joint engagement in learning via traditional and digital media" (p. 2).

Two-way knowledge exchange activities and practices have been shown to benefit students, parents and teachers, regardless of the socioeconomic status of stakeholders (Hughes & Greenbough, 2006); however, much of the communication that exists between parents and teachers continues to take the form of what Marsh (2003) described as "one way traffic" (p. 376). Marsh investigated the extent to which the home literacy practices of a group of young children in a working-class community were reflected in the nursery curriculum they attended. Data from the study indicated that the children's home literacy experiences were not well reflected in the nursery curriculum; however, the school literacy practices did infiltrate the home experiences. Books read in the home were likely to be considerably different books from those read in the nursery. Whilst home literacy practices were more likely to recognise popular culture and new technologies, the nursery curriculum was more likely to reflect traditional reading practices and theories of literacy in the early years. Marsh (2003) argued that these traditional beliefs "need to be challenged effectively if the literacy traffic between home and nursery is to flow in both directions for families in all socio-economic and cultural groups" (p. 380). Dialogic reading interventions value parent involvement in children's early literacy development and can facilitate the transmission of knowledge between home and school environments.

Overall findings of contemporary research suggest that, although parental involvement has a positive effect on reading acquisition, the types of involvement vary in their effectiveness.

Sénéchal (2006) reported that having parents teach specific literacy skills to their children was twice as effective as just having parents listen to their children read and six times more effective than just encouraging parents to read to their children. This study acknowledges that whilst there is considerable literature on the positive effects of parental involvement on literacy development there is some debate about the ways in which the home environment impacts on children's educational outcomes at school and the effectiveness of parental interventions. The National Literacy Trust conducted a literature review of published research findings on parental involvement and literacy and found strategies that involve training and support for parents are more widely regarded as being effective (Close, 2001).

**Shared Reading**

As previously discussed, research frequently supports the premise that shared book reading supports children's oral language development, including vocabulary performance (National Early Literacy Panel, 2008), and knowledge about the world and stimulates children's motivation and interest in reading and becoming literate (Dwyer & Neuman, 2008). As parents model literate behaviours during shared reading, the child learns about concepts about print, words and meanings, and letters and sounds. Parent-child interactions during shared book reading are important for developing children's early literacy skills and are, therefore, recommended by literacy experts (Han & Neuharth-Pritchett, 2013; National Early Literacy Panel, 2008). As parents share books with their children they discuss the story, the pictures and the print, ask questions and make connections between the story and the children's personal experiences. As children engage in this dialogic process they develop knowledge about how print works and an understanding about constructing meaning. Shared book reading that includes meaning-related and print-related interactions assists children to acquire new vocabulary and develop their understandings of word meanings. Meaning-related interactions assist children to make sense of the story through parents paraphrasing, commenting and asking questions; whereas, print-related interactions focus on discussion about letters, sounds and words in the text (Han & Neuharth-Pritchett, 2013). Interactions that have been found to develop vocabulary through shared reading include introducing new words, and extending, testing and recalling children's understandings of new words and new ideas. Discussions can be enhanced by asking clarifying questions and continuing the discussions to further develop comprehension (Sénéchal & Cornell, 1993). Although shared reading has been shown to improve vocabulary development, differences between the

acquisition of receptive vocabulary and expressive vocabulary have been noted (Sénéchal & Cornell, 1993). In a shared reading study designed to assess 4- and 5-year-old children's expressive and receptive vocabulary growth, receptive language development was found to be robust, however, children's expressive language was not enhanced (Sénéchal & Cornell, 1993). Children were exposed to a single reading of a storybook under one of four conditions. Each condition required a decreasing amount of participation from encouraging verbal participation and asking the child questions to simply reading the book verbatim without encouraging the child to participate. In this case, reading the book verbatim was just as effective as involving the child by asking questions or discussing the new vocabulary.

Whilst it is acknowledged that many shared book reading studies have focussed on pre-school children and toddlers (Arnold et al., 1994; Blom-Hoffman et al., 2007; Fielding-Barnsley & Purdey, 2002; Fielding-Barnsley & Purdie, 2003; Whitehurst et al., 1994), there is a need to examine shared book reading with children in the early years of school (Bus, van Ijzendoorn, & Pellegrini, 1995). Bus et al. (1995) noted that "the effect of book reading is not restricted to children of preschool age; however, the effect seems to become smaller as soon as children become conventional readers and are able to read on their own" (p. 17). Providing families with access to a dialogic reading programme in the early years of school can improve the literacy outcomes of students.

**Dialogic Reading**

Dialogic reading programmes provide access to educational materials and empower parents to engage in meaningful reading experiences with their children. Dialogic reading is an interactive technique for sharing books with young children that acknowledges the importance of social processes in learning to read. The interactions between parents and their children during shared book reading support children to work within their Zone of Proximal Development (Vygotsky, 1978) and thus further develop their own literacy skills. Children who are read to dialogically are actively involved in the learning to read process. Rather than simply experiencing a book as a passive listener as can be the case with shared reading, the child is assisted to become the storyteller while the parent becomes an active listener. Repetitive books with simple text patterns may encourage children to join in with the reading. Dialogic reading promotes the discussions and explanations that lead to enhanced oral language development and provides meaningful opportunities for explicit instruction.

Dialogic reading is more than an education experience; it is also an aesthetic experience that promotes cognitive and emotional development as well as the acquisition of language and literacy skills. Children learn about letter-sound relationships, vocabulary, sentence structure, story structure, and concepts about print. The strategy has been shown to improve children's early literacy skills (Knopf & Mac Brown, 2009), with children who have been read to dialogically outperforming children who have been read to traditionally on tests of language development (Whitehurst, 1992).

The goal of dialogic reading is to support the child to move from being dependent on the adult to listen to the story to being independent and becoming the storyteller. The adult's role is to encourage the child through praise, prompt the child through questions and draw attention to new vocabulary, while encouraging the child to engage in conversations about the book, about the learning and about the child's prior knowledge and experiences (Zevenbergen & Whitehurst, 2003). Central to the dialogic reading process are the CROWD and PEER techniques that parents can employ to assist their children's literacy development (Zevenbergen & Whitehurst, 2003). PEER is an acronym for Prompt, Evaluate, Expand and Repeat. Parents using the prompt technique prompt the child to comment about the book, evaluate the child's response, expand the child's response by rephrasing and adding information to it, and finally repeat the prompt to ensure the child has benefited from the expansion. CROWD is an acronym for completion, recall, open-ended, wh- and distancing prompts. Completion prompts are similar to cloze activities and are suitable for rhyming or repetitive text. The parent reads the first part of the sentence and the child completes it. Recall prompts are suitable for asking children questions about what happened in the text. Open-ended prompts are particularly suitable for books with rich, detailed illustrations. The parent asks open-ended questions to help increase the child's expressive fluency and focus their attention on the text. Wh- prompts are suitable for developing vocabulary by directing the child to look at the pictures and asking what, where, when, why and who questions. Distancing prompts are the most difficult CROWD prompts. The parent helps the child to make connections between the story and the child's previous experiences. Distancing prompts help children bridge the gap between the written word and the real world, and help develop verbal fluency, conversational abilities, and narrative skills (Zevenbergen & Whitehurst, 2003).

Dialogic reading of children's picture books promotes reading for pleasure by encouraging parent and child interactions and repeated readings of books that are engaging and follow the child's interests. Students who read for pleasure in their spare time and have access to a variety of materials are on average much better readers (Shanker & Cockrum, 2009). In contrast, students who possess poor reading habits and negative attitudes to reading are more likely to be associated with reading failure (Kirsch et al, 2002). Reading for pleasure has been associated with improved literacy outcomes (Kirsch et al, 2002), with Dugdale and Clark (2008) asserting it is the "most important indicator of the future success of a child and improvements in literacy, at any point in life, can have a profound effect on an individual" (p. 5).

Parent involvement in the dialogic reading programme can be modified, interactions can be adapted, and texts can be selected to cater for the individual needs of each child. Dialogic reading interventions that are enhanced with a focus on developing concepts of print, phonological awareness and alphabetic knowledge have been shown to successfully improve literacy outcomes for students, when compared to similar children who do not receive the intervention (Fielding-Barnsley & Purdie, 2003). Barnsley and Purdie (2003) developed a dialogic reading intervention that focussed on concepts of print, phonological awareness and alphabetic knowledge. Similarly, Elias, Hay, Homel, and Freiberg (2006) adapted the programme to include a language focus that catered for the needs of English as Second Language (ESL) families. Both programmes were successful in improving literacy outcomes, when compared to similar programmes involving children who did not receive the interventions. As demonstrated above, a shift in traditional reading roles is at the heart of the dialogic reading programme. The parent serves as a coach to promote literacy development and the child is supported to become the reader. It is likely that parents will require explicit instruction in these fundamental reading techniques. Providing educational materials and assisting parents to maximise the benefits of family literacy programmes such as this should be a priority for schools with young children at risk of reading failure.

Dialogic reading programmes thus serve to promote home-school partnerships, enhance family literacy and provide access to educational tools and materials. Dialogic reading instruction may also serve to mediate what Stanovich (1986) termed the Matthew Effect, where the rich get richer and the poor get poorer. Evidence suggests that family literacy programmes that incorporate shared reading, explicit teaching and parent coaching can

produce significant effects in terms of reading engagement and early literacy outcomes (Lonigan & Whitehurst, 1998). Indeed, it may be possible to bridge the gap between those who have limited reading experiences and are at risk of reading failure and those who have rich and frequent experiences and therefore experience reading success.

**Barriers to Parent Involvement**

Although much has been written and much is understood about the value of parent involvement in children's education, in practice parent involvement is not always realised (Mol, Bus, de Jong, & Smeets, 2008). Hornby and Lafaele (2011) investigated the barriers to parent involvement and identified factors that can hinder this important partnership between home and school. They argued that parent involvement is a complex matter that is "shaped and limited by a divergent range of barriers related to parents and families, children, parent–teacher differences and societal issues" (p. 50). Lack of confidence in helping their children or communicating with teachers, prior negative experiences with their children's previous schools or during their own schooling, personal philosophies about how children learn (e.g. whether learning is innate or extrinsic), parents' perceptions about how their involvement is valued by teachers and schools, parents' confidence in their own academic skills and abilities to help their children can all inhibit parent involvement. Family circumstances such as work and family commitments, poor physical or mental health, and lack of access to educational materials and transport can make it difficult for families to participate in their children's education. Barriers relating to class, gender and ethnicity can also impede parent involvement. Minority groups, in general, do not have the same knowledge and power as middle class families and are often "less involved, less represented and less informed, and are less likely to have access to resources, as well as more likely to have problems associated with language, transport, communication and child care" (Hornby & Lafaele, 2011, p. 41). In reality, while much of the discussion around home school partnerships is concerned with parent involvement, in practice it predominantly focuses on mothers' involvement (Saracho, 2007b). Research investigating fathers' involvement has demonstrated that fathers can assist their children to develop literacy skills through reading books, engaging children in discussions about the books they read, and encouraging children to read more books (Saracho, 2007a). Furthermore, the benefits of fathers' involvement in their children's literacy development have not been confined to the children. Fathers have benefitted through "greater skill acquisition, greater confidence and self-esteem, a better father-child

relationship, and increased engagement with learning" (Clark, 2009, p. 15). Further research that provides insight into fathers' contributions into young children's literacy development is required. Literacy interventions that provide fathers with information to support their children's literacy learning and interventions that motivate fathers to assume responsibility for their children's literacy development are of particular importance (Saracho, 2007a). The challenge for educators and researchers is to find ways to attract fathers to participate in these literacy programmes (Saracho, 2007a). Providing families with an opportunity to participate in a shared reading intervention with iPads and digital texts may be one way of motivating fathers to assume responsibility for their children's literacy learning in the home.

**The Effects of Socio-Economic Status**

Access to and ownership of literature and books, and amount of time spent listening to and reading texts varies considerably among children from lower SES, middle SES and upper SES families (Dougherty Stahl & McKenna, 2006; Gutnick, Robb, Takeuchi, & Kotler, 2010; Marsh, 2002; Marsh et al., 2005). Evidence from the Gutnick et al. (2010) investigation into the media habits of young children suggested that access to printed texts varies by household income, with printed children's books, newspapers and magazines more prevalent in high-income homes than low-income homes. Children's social relationships, cultural experiences and access and ownership of literature and books can build background knowledge and significantly affect their learning to read experience and their school outcomes. Children from low SES backgrounds often lack opportunities for developing concepts and schemas and therefore have limited background knowledge from which to draw. Hence, building background knowledge has been identified as a key to bridging the knowledge gap for children at risk with Neuman (2005) asserting that "both skill development and conceptual knowledge development need to occur simultaneously" (p. 38).

Although children from middle-class backgrounds may be "initiated to print through dialogue about its features" (Stahl & Miller, 2006, p. 27), this may not be the case for all children. Children from backgrounds where access to books and shared reading experiences are limited, or literacy is not highly valued, are less likely to develop the skills that are necessary for early reading development. Consequently, children from low SES backgrounds exhibit knowledge gaps in their concepts about print, phonological awareness and their vocabulary (Shamir & Korat, 2015). Shared reading is a valuable method of initiating all children to print

that promotes reading for pleasure, concepts of print awareness, phonological awareness, fluency and recognition of sight words, vocabulary development and comprehension. Children who come to school with limited exposure to print may benefit from direct instruction and opportunities to bridge the gap between those who have had extensive exposure to books and reading and those who have not. Gaps in literacy achievement have been shown to widen over extended school holiday breaks, particularly for students from low SES backgrounds and those with limited exposure to books, educational resources and support. The phenomenon of declining test scores over the summer breaks is referred to as the 'summer slide'.

**Summer Slide**

Research into the summer slide, the term used to describe a decline in test scores over school holiday breaks, reveals differences in the achievement scores on tests of reading cognition between low SES children and middle-class children. Whilst middle class children appear to demonstrate gains in reading, lower SES children demonstrate losses of up to three months over the summer holiday break (Borman, Benson, & Overman, 2005; Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Tiruchittampalam (2014) reported that in relation to children's reading development over two summer school year programme that SES was an indicator of reading loss or gain. Children from high SES families improved their alphabet knowledge and phonemic awareness knowledge over the first summer holidays, whereas children from low SES families experienced losses of up to 50%, widening the achievement gap between the two groups. Children did not experience losses in vocabulary over the first summer; however, the gap between children from low and high SES families that existed at the beginning of the holiday was maintained. In the second year, children from low SES families once again experienced losses in alphabetic and phonemic awareness knowledge, whilst children from high SES families experienced gains. Children from low SES households experienced losses of almost 40% on vocabulary development whilst children from high SES households experienced gains of 70%. The differences in test scores may be explained in terms of access to educational material and learning support (Borman et al., 2005;Cooper et al., 1996; Tiruchittampalam, 2014).

White's (1982) meta-analysis provides evidence of the correlation between SES and academic achievement; however, White (1982) argued that SES measures are not the

strongest predictor of achievement. The social experience of shared reading and reading aloud activities such as discussing the stories and vocabulary in the text can be attributed to later reading development. Similarly, Bus et al. (1995) conducted a meta-analysis on intergenerational transmission of literacy and joint book reading and found the effect of the frequency of shared book reading "is not dependent on the socio-economic status of the families" (p. 15). In contrast, Mol et al. (2008) conducted a meta-analysis of sixteen studies to examine the added value of dialogic parent-child book readings. Their findings suggest that whilst dialogic reading can change the home literacy activities of families with 2- to 3-year-old children it does not change those of families with children at greatest risk of school failure.

Although research frequently supports the premise that low reading achievement correlates with low SES (Reardon, 2013) there is a growing body of research that suggests positive parental perceptions of education, home-school literacy partnerships, and access to educational materials, are likely to mediate this phenomenon (Cairney & Munsie, 1992; Chall & Snow, 1982; Clark & Akerman, 2006; Department for Education, 2011; Lonigan & Whitehurst, 1998; Marsh et al., 2005). Dialogic reading programmes link home and school experiences and have been shown to improve children's language and literacy skills by providing families with access to information and educational materials (Johnson, Adams, & Haywood, 2011; Knopf & Mac Brown, 2009; Whitehurst, 1992). The interactions between parents and their children as they share a book together facilitate authentic teaching experiences and thus the development of the aforementioned emergent literacy skills.

**Children's Books**

Children's books have the power to significantly influence children's early learning, particularly with regard to phonological awareness, language and vocabulary development. Research demonstrates "that certain features of text-format, illustrations, language, text features, and topic play an important role in enhancing children's understanding and interaction with books" (Dwyer & Neuman, 2008, p. 493). Dwyer and Neuman (2008) argued that "for storybooks to make a significant influence in children's lives…they need to be selected carefully, based on children's development" (p. 489). Books that incorporate predictable and patterned text, alliteration, songs, rhymes, and rhythm encourage phonological awareness and early literacy development. Saracho and Spodek (2010)

investigated families' choices of children's books for shared reading. Teachers, parents and children from five kindergartens participated in the study over a four-month period. Twice a week, family members chose literature books that were developmentally appropriate and that were of interest to both themselves and their children. The books were categorised by genre: traditional literature, modern fantasy, contemporary realistic fiction, information books and poetry. The most popular books chosen by the families were children's fantasy books and these were often about animals. The second most popular books were contemporary realistic fiction books, followed by information books, and traditional literature. Poetry books were found to be the least popular choice for the families.

**Digital Books**

Digital books are become a more important consideration in the early years reading programme (Larson & Marsh, 2013; Merchant, Gillen, Marsh, & Davies, 2012; Yelland, Neal & Dakich, 2008). Digital books, electronic picture books commonly known as e-books, have been in circulation since the late 1990s and while the books were available on the web and in software packages, consumers did not embrace the technology in the same way that tablet device users are today. New digital mobile media tablet devices, such as the iPad provide new opportunities for students to access e-books and engage in reading with their families. Shared reading with digital texts has been shown to improve children's phonological awareness (Shamir, Korat, & Barbi, 2008; Shamir, Korat, & Fellah, 2012), CAP (Shamir et al., 2008) and vocabulary development (Shamir et al., 2012). Due to the compact size and portability of tablet devices, families can relax on the couch or snuggle up in bed with a tablet device in much the same way as they would with a traditional book (Verenikina & Kervin, 2011). Evidence from Verenikina and Kervin's (2011) iPads, Digital Play and Pre-schoolers pilot study suggested that "the use of the digital technologies by children provides an additional dimension for communication and collaborative activities with parents and siblings in the family" (p. 12). Although such technologies can be highly entertaining, the interactive features in some digital books can also be distracting. Vaala and Takeuchi (2012) surveyed 462 parents, who reported owning an iPad, to explore parents' perceptions and practices surrounding co-reading with children on iPads. They noted that although some e-book features are perceived as helpful for early readers, other features are considered distracting. More than 75% of iPad owners who read e-books with their 2-to-6-year old children believed the highlighted text during the narration feature and the audio narration feature helped

children learn to read; however, with regards to interactive features, nearly 50% of parents indicated they believed the hotspots/animations distracted their children from reading and over 60% reported that the videos and games in e-books also distracted their children from reading. It is important to note that the parents in the Vaala and Takeuchi (2012) study were mainly "white/non-Hispanic, relatively well-educated and affluent" (p. 1) and their findings may not necessarily be generalisable to families in other socio-economic populations.

Scholastic, together with the Harrison Group, surveyed a nationally representative sample of children and their families (n=2148) to examine family attitudes and reading values (Scholastic, 2012). Forty-nine percent of parents, an increase of 13% since 2010, felt their children did not spend enough time reading for pleasure and 72% of parents were interested in having their children read e-books. Fifty-one percent of children who had not previously read an e-book were interested in doing so. The report (Scholastic, 2012) revealed that interactive features were an important consideration when parents and children chose children's books. More than 70% of parents cited the read aloud option, highlighted text to help children follow the narration feature, and built-in activities to develop reading and vocabulary skills as important considerations when choosing digital books for children. Indeed, families are exploring the relationships between literacy and technology. They are considering digital books as a viable option for reading and families are thinking about the unique features in digital books and how they can be used to develop children's literacy skills.

**Digital Literacy**

The longstanding relationship between literacy and technology is becoming increasingly complex as new technologies emerge and become increasingly popular (Yelland et al., 2008; Zevenbergen & Logan, 2008). Even though technology is an essential element of literacy in the 21st century, the nature of the technology influences and shapes the literacy experience. The earliest cave drawings, the first mass produced printed books and digital texts all required technology to facilitate the literacy experience. The introduction of tools such as ink, paper, print, Gutenberg Press, computer screen and tablet device have transformed the communication and literacy practices. The relationship between technology and literacy in the 21st century is dynamic and constantly changing. The experience of reading digital texts on tablet devices such as the iPad is transforming and extending the literacy experience.

Young children's home lives are becoming increasingly shaped by their engagement with a wide range of digital technologies (Marsh, 2010; Marsh et al., 2005; V. Rideout, 2014; V. J. Rideout, Vandewater, & Wartella, 2003; Scholastic, 2012, 2015). Data from an Australian study of four and five year-old children "indicates that young children have considerable access to computers in out-of-centre contexts" (Zevenbergen & Logan, 2008, p. 43) and enter early childhood education settings with a repertoire of digital skills. Computer games, laptop computers, television, DVD players, and mobile phones are popular with young children and their families (Gutnick et al., 2010; Marsh, 2004; Prensky, 2001). New technologies are progressing rapidly, and the types of devices people use are changing. In 2003, a study of 1000 American parents found that nine out of ten children in the 6 months to 6-year age range watched television and videos or DVDs. A high proportion of young children were using new digital media, with 70% of 4-6-year old children using computers and 50% playing video games (Rideout et al., 2003). The majority of parents (96%) believed that books were very important for children's learning, however, a significant number (72%) also believed that computers mostly helped their children's learning. Only 5% of parents indicated that computers mostly hurt their children's learning. The finding that mobile media devices and particularly mobile stand-alone devices such as e-readers and tablet devices were perceived as positive for learning is consistent with the research of Gutnick et al. (2010) and Robb (2010).

**IPads and Tablet Devices**

Since their introduction in 2010, Apple's iPads have become one of the most popular tablets in the world. The size of the screen and the growing number of educational applications (apps) and digital books that are available for the iPad offer new possibilities for literacy learning in home and formal education environments. The *2011 Horizon Report* recognised the rapid growth of mobile learning and adoption of mobile media devices, acknowledging that "Gartner Research projects internet-capable mobile devices will outnumber PCs by 2013" (Johnson et al., 2011, p. 14). The *Learning at home: Families' educational media use in America* study reported that 55% of children aged 2- to 10 are living in homes with tablet devices (Rideout, 2014). The rapid adoption of such devices presents new and exciting opportunities for schools to "capitalize on the educational potential of the devices" (Oakley, Pegrum, Faulkner, & Striepe, 2012, p. 14) and make connections between home and school experiences. The *Kids and family reading report* (Scholastic, 2015) revealed that the

percentage of children aged 6-8 who have read an e-book has increased steadily since 2010 from only 28% of children having read an e-book in 2010 to 65% in 2014. Indeed, tablet device ownership and children's access to e-books is on the rise and educators must recognise the digital practices and learning opportunities that exist outside the classroom and early learning centres, for as Edwards (2005) argued "positioning the computer as separate from children's development and learning within the early childhood educational context is arguably akin to denying the role it plays in their sociocultural experiences outside the educational setting" (p. 25). It must be acknowledged, however, that not all children come to school with the same experiences, and experiences with digital technologies are no exception (Oakley et al., 2012). Among the 2- to 10-year-olds in the *Learning at Home* (Rideout, 2014) study, the percentage of access to internet and technology varied considerably. Only 27% of homes in the lowest income bracket had tablet devices in the home compared with 77% of homes in the highest income bracket. Similarly, only 58% of homes in the lowest income bracket had access to high-speed internet, compared with 98% in the highest income bracket. Furthermore, e-reader device ownership also increased by family income with 16% in the lowest income bracket, compared with 45% in the highest income bracket. Early childhood educators, therefore, have a responsibility to address the potential digital divide and provide learning experiences that cater for the needs of all students before the gap widens. Bridging the digital divide in the lives of some students will depend on providing them with access to technology, not only at school but in the home environment as well (Yelland, 2013). Providing material resources for families is only one part of the learning to read equation and may not be enough to bridge the divide. Neuman and Celano (2012) argued that class and cultural based parenting practices are more critical. Their investigation found that providing access to technology "could not make up for the intangible social and psychological resources—the parents and other adults who make the many pathways to reading and information-seeking meaningful and important to children" (p.22-23).

Governments and schools in Australia are increasingly acknowledging the skills digital natives bring to school and are integrating digital technologies into their early childhood curriculums (Zevenbergen & Logan, 2008, p. 38). Prensky (2001) coined the term "digital natives" to describe the children born into the age of ubiquitous technologies. The term, 'digital natives,' has been criticised by those interpreting the term literally to mean that all children born into this age automatically know about and use digital technologies (Prensky,

2011). It is important to note that the term is used as a metaphor in this thesis, to describe children born into an age where they grow up with digital technologies and digital toys. It does not assume that these children know everything about technology or that all children have access to technology. Prensky (2011) acknowledges that "being a digital native is not, at its core, about capabilities, or even knowledge, regarding all things digital. No matter who you are, all those things have to be learnt in some way" (p. 17).

One-to-one digital device initiatives are becoming increasingly popular in schools, both in Australia and internationally. Historically, one-to-one computing initiatives have sought to provide every student with individual access to a computer to support their learning (Australian Department of Education Employment and Workplace Relations & Council of Australian Governments, 2009; Ministerial Council on Education Employment Training and Youth Affairs, 2008). Early initiatives provided students with desktop computers. Recently, one-to-one technology initiatives have sought to provide laptops for students' use at home and at school (Penuel, 2006) and such initiatives are continuing to evolve. The decreasing size and costs associated with new technologies offer new opportunities to implement one-to-one initiatives that facilitate new ways of learning and communicating. Penuel (2006) asserted that, "the decreasing costs, combined with the lighter weight of laptops and increasing availability of wireless connectivity" (p. 329) are all contributing to the expansion of one-to-one computing initiatives around the world. Penuel (2006) maintained that "mobile handheld devices allow mobile students to learn anywhere, anytime, including outside the spaces and times of formal education" (p. 13). Currently both private and public schools are beginning to provide mobile media tablet devices such as the iPad or iPod for home and school use (Oakley et al., 2012). Whilst some schools provide computers and mobile media digital devices at no cost to their families, other schools expect families to hire or buy the computers or digital devices. One-to-one initiatives require consideration of the most effective ways in which technologies can be employed to support young children's learning in "new and dynamic ways that were not previously possible" (Yelland, 2011, p. 33)

While it is acknowledged that technology is permeating everyday life, very little is known about the effects on young children's early literacy development, particularly the effects of newer technologies such as mobile digital media devices. However, Hattie's (2008) synthesis of over 800 meta-analyses relating to achievement demonstrated that "the use of computers can assist in engagement and positive attitudes to learning and school" (p. 221). As

mentioned above, engagement and positive attitudes to learning are important factors in developing successful and lifelong readers. Rideout, Vandewater and Wartella (2003) noted that "many experts have argued that it is especially critical to understand media use by the youngest children, noting that because social and intellectual development are more malleable in these early years, media use at this age could have an especially significant impact" (p. 3). There is an increasing body of knowledge pertaining to technology in education; however, very little is known about the effects of iPads in literacy education and home-school relationships, particularly with regard to the formative early years of school.

**Justification**

The recently introduced Belonging, Being and Becoming Early Years Learning Framework (Australian Department of Education Employment and Workplace Relations & Council of Australian Governments, 2009) and Australian English Curriculum documents (ACARA, 2012) necessitate the integration of digital texts into early childhood education in Australia. Zevenbergen and Logan (2008) argued that early childhood providers need to rethink their practices and recognise the "distinct and defining characteristics" (p. 37) of digital natives as they come to school. Early childhood settings need to cater for their children's unique and changing needs and provide learning experiences that "address the potential digital divide for those from digitally poor families" (Zevenbergen & Logan, 2008, p. 37). The majority of computer related studies focus on teachers and their use of technology for instruction, rather than on students using computers to assist them in their learning and such studies often compare classes with and without computers (Hattie, 2008). Although this present study will compare shared reading practices with and without digital technology, the focus will be on the different ways families engage with digital texts and the effects on students' learning. Despite, computers in education being "among the hottest topics of research" for some time (Hattie, 2008, p. 220), "the educational technology research community's collective knowledge about one-to-one initiatives has not kept up with the rapid expansion of these initiatives or with their breadth" (Penuel, 2006, p. 329). Research into computer-assisted learning employing digital hand held tablet devices is relatively new, particularly with regard to one-to-one implementation in schools. More research is required into the role of iPads in literacy learning (Oakley et al., 2012). Penuel et al. (2002) argued that "leaders in schools, districts, and state departments of education need data on programme effectiveness and on issues faced by schools when implementing these kinds of programmes to make good

decisions about where to invest technology dollars" (p. 1). Furthermore, although the benefits of home-school literacy partnerships and traditional shared reading experiences are well understood, very little is known about the effects of digital shared reading on children's early literacy development and home-school relationships.

Although there is a considerable field of research regarding young children's traditional shared reading experiences there appears to be a gap in the research regarding their shared reading experiences with electronic books and new reading technologies. Indeed, more research is needed into how new technologies can be integrated into education (Gutnick et al, 2010). The aim of this study is to understand and analyse the relatively new phenomenon of young children and their families reading texts on school provided mobile digital tablet devices. The study will focus on the effects of reading electronic books and the opportunities afforded by implementing a one-to-one tablet device initiative, particularly in terms of improving parental engagement in student learning and facilitating the development of home-school partnerships. Speculations for the use of iPads in education environments are sketchy, particularly with regard to the early years of schooling. Currently, a debate is arising, both locally and internationally, about the value of schools investing funds in one-to-one mobile media device initiatives. Arguments for and against programmes that seek to provide digital technologies to young children and their families seem futile in the absence of cumulative and robust research findings. As Verenikina and Kervin (2011) asserted, "there has been an ongoing debate on how (and whether) digital technologies can fit in the lives of young children, although the use of computers and other digital devices such as iPhones, iPads and game consoles are rapidly becoming a reality in early childhood settings and many children's homes" (p. 4). Therefore, there would seem to be an imperative to acknowledge that such practices and programmes exist and investigate the effects on young children's early education and home-school relationships.

This present study will investigate the effects of the school implemented one-to-one iPad programme on families' reading practices and effects on children's early literacy development. It aims use both quantitative and qualitative procedures in this investigation. Although it is acknowledged that many factors influence children's early reading development (Larson & Marsh, 2013) in future chapters of this study, a major aim of this thesis is to weave a coherent story from the data analysis so that it helps to provide insights into the lived experience of the participants in terms of their reading. Rather than attributing

positive or negative literacy outcomes exclusively to the one-to-one iPad implementation programme, the study aims to examine the social relationships and discourse that have been shown to be so important for successful shared reading experiences and early literacy development. This study aims to present evidence about the ways families experience reading electronic and traditional texts, the quality of these experiences, and the effects of these experiences and practices on children's early literacy development. It is anticipated that the findings from this study may contribute to the growing body of knowledge that may be used to inform schools, curriculum developers and education departments as they take up the challenge of bridging the "digital divide" between those individuals who actively use digital technology and those who do not, and fostering meaningful and authentic home school partnerships, as well as assisting all children to become more successful readers.

**Research Questions**

This present study aims to answer the following questions as it examines the effects of integrating a tablet device, such as the iPad, into the home-school reading programme. IPad were chosen as the tablet device for this study as current literature suggests they are engaging, easy to use, provide quick access to content and are intuitive for children and adults (Oakley et al., 2012).

The research questions have been developed based on two elements: parent and child reading behaviours and impact on early literacy development. This study will investigate the following questions:

1. Are parents of children in low SES schools using digital books as a shared reading device with their young children?
2. How are parents using digital books with their children?
3. What are the effects of reading digital texts on young children's early literacy development and does this differ from traditional reading practices?
4. What are parents' perceptions of the digital shared reading intervention?
5. How can the benefits of the digital shared reading intervention be maximised?

## Conclusion

This chapter has outlined the theoretical framework and discussed the seminal and contemporary research that has informed this study. This present study will be one of the first to investigate how families in low socio-economic status communities read electronic books on school provided iPads and the effects of this type of reading on young children's literacy development and home-school literacy partnerships. Indeed, as demonstrated above, more research is needed into how schools can bridge the potential digital divide and investigate how new technologies can be integrated into education (Gutnick et al., 2010; Yelland, 2010, 2013). The decisions parents and teachers make about their children's access and availability to digital technologies is becoming an important consideration in children's schooling because of the increasing prevenance of ICT devices in the community, in the home, and in the work place (Guernsey et al., 2012). The educational value of these technologies needs to be guided by evaluative research on the impact of digital technologies on children's learning (Hattie 2008) and its application to educational fundamentals, such as children's development of reading (Larson & Marsh, 2013). Research into computer-assisted learning employing digital hand held tablet devices is relatively new, particularly with regard to one-to-one implementation in schools. Leaders in schools, districts, and state departments of education need data on programme effectiveness and on issues faced by schools and families when implementing these kinds of programmes to make good decisions about where to invest technology dollars. It is anticipated that this study will provide such data.

# Chapter 3 Background and Methodology Overview

This chapter details and justifies the ethical implications, methodological and theoretical frameworks, research design, participant and sampling techniques, data collection and analysis stages, and assessment methods and tools employed to address the aims of this inquiry into the effects of a one-to-one e-book reading initiative on young children's early literacy practices and development.

## Ethical Implications

Ethical approval for this study was obtained prior to the commencement of the research. Permission was granted from the University of Tasmania, Faculty of Education Ethics Committee and the University of Tasmania Human Research Ethics Committee. Further, the Department of Education, Tasmania, and the Principals of the two schools that are the focus of this study also granted permission.

To ensure confidentiality, digital data were stored on password-protected computers and hard copy data were stored in locked cabinets. Pseudonyms names have been used in this research to maintain the participants' confidentiality. The participating schools have not been identified in this thesis, nor has the location of the Child and Family Centre that was central to the implementation of the intervention in phase three.

## A Background to the Research Project

Research design involves three important components that are inextricably linked: philosophical worldview, research methodologies, and specific research methods. The three components informing the research project design and driving the implementation are described below.

## Theoretical Framework

An eclectic philosophical worldview informed this research design, and thus can best be described as pragmatic. A pragmatic worldview does not commit to a particular philosophy at the exclusion of all others; rather it acknowledges a range of philosophies (Creswell, 2009). The researcher acknowledges the social construction of knowledge and believes that individuals construct meaning as they interact and engage in social environments and that

these meanings are subjective. It is, therefore, important to understand the complexity of individuals' varied beliefs and experiences and the social contexts in which they exist. Furthermore, the researcher also acknowledges the inequalities that exist in society and seeks to address this issue in her research by empowering the participants through the provision of educational materials and support. Hence, an advocacy or participatory worldview (Creswell, 2009) also informed the study. Researchers approaching their projects from a pragmatic worldview employ all approaches available to investigate and understand a problem or phenomenon. The researcher believed that collecting a range of different types of data would afford a deeper and more detailed understanding of participants' experiences, than would have otherwise been possible if a single method was chosen.

**Methodological Framework**

The methodology for this study was formed from a question-driven perspective, based on O'Leary's (2010) suggestions. The aim of the project was to answer the research questions by providing a comprehensive description and analysis of families' home reading experiences and the effects of reading electronic texts on children's early literacy development. The questions guiding the study are:

1. Are parents of children in low SES schools using electronic books as a shared reading device with their young children?
2. How are parents using digital books with their children?
3. What are the effects of reading digital texts on young children's early literacy development and does this differ from the effects of traditional reading practices?
4. What are parents' perceptions of the digital shared reading intervention?
5. How can the benefits of the digital shared reading intervention be maximised?

Case study methodology was deemed the most effective strategy of inquiry for the present study. Case studies facilitate an in-depth investigation of a "program, event, activity, process, or one or more individuals" (Creswell, 2009, p. 13) and include multiple types of data collection measures and techniques at multiple points in time. Gall, Gall, and Borg (2007) defined case study research as "(a) the in-depth study of (b) one or more instances of a phenomenon (c) in its real-life context that (d) reflects the perspectives of the participants involved in the phenomenon" (p. 447). As the project required an in-depth understanding of families' experiences, a single and multiple case mixed methodology approach was adopted

to add breadth and depth to the research project. Mixed methodology research is considered relatively new when compared to qualitative or quantitative research, with some writers (Creswell, 2009; Jick, 1979) tracing its inception to the work of Campbell and Fiske (1959). Mixed methodology research integrates elements of both qualitative and quantitative methods and is becoming increasingly popular in social science research. The mixed method approach is designed to provide a holistic understanding and facilitates capturing varied perspectives and thus allows for triangulation of the qualitative and quantitative data. Triangulation refers to the "means for seeking convergence across qualitative and quantitative methods" (Creswell, 2009, p. 14). Jick (1979) asserted that triangulation can have other meanings and uses as well, arguing that triangulation makes it possible to "capture a more complete, holistic, and contextual portrayal of the unit(s) under study" and may be used "not only to examine the same phenomenon from multiple perspectives, but also to enrich our understanding by allowing for new or deeper dimensions to emerge" (p. 603). The complex nature of mixed methods research that allows for deeper understandings to emerge presents many challenges for the researcher. First, the researcher requires an understanding of both qualitative and quantitative methods of data collection, analysis and reporting methods. Second, mixed methods research is time consuming and labour intensive due to the need for extensive data collection. Third, mixed methods research requires the researcher to possess a broad range of academic and interpersonal skills in order to complete the project. In this present study, the researcher carried out the data collection and implemented the shared reading interventions and family support groups, and, therefore, became personally involved with the participants through these processes.

Sequential and concurrent mixed methods procedures were adopted for this study. The study began with a quantitative survey to provide contextual information about the research sites, and continued with quantitative and qualitative methods of data collection to provide a detailed and comprehensive analysis. The qualitative data discussed in this research provides insight into the quantitative data. Analysis of qualitative data, such as interview and videotaped shared reading experience data, seeks to provide a broader explanation of the assessment results than would have been achievable by the analysis of quantitative data alone.

## Single and Multiple-Case Research Design

As described above, case study research is an intense study that Yin (1994) describes as "an empirical inquiry that investigates a contemporary phenomenon within its real life context…" (p. 13). Furthermore, Woodside (2010) provided a broader definition by proposing that case study research is "an inquiry that focuses on describing, understanding, predicting, and/or controlling the individual (i.e., process, animal, person, household, organization, group, industry, culture or nationality)" (p. 1) and thus noted that the inquiry is not limited to a sample of $n = 1$. Single and multiple case study is particularly suitable when a deep understanding is required, effect sizes are to be measured and generalisability is not of supreme importance. Indeed, single and multiple cases can be investigated and reported within the one inquiry (Gall et al., 2007; Woodside, 2010). The purpose of this inquiry was threefold: first, to examine the effects of providing families with iPads and e-books on children's early literacy development; second, to examine parents' beliefs about the effects of the intervention; and third to establish whether the two-way knowledge exchange group had a positive effect on families' digital reading practices and beliefs. Thus, a complex design that allowed for triangulation, or deep understanding, was required. The rationale for using qualitative and quantitative, single and multiple case study methodology was that it allowed for an in-depth exploration, and subsequent deep understanding, of the effects of the one-to-one digital reading initiative through the collection of multiple forms of evidence across multiple points (Creswell, 2009; Woodside, 2010). The single and multiple-case design facilitated both within- and cross-case statistical analyses, thus providing an understanding of the effects across the group as well as on individuals.

## Three Phases

A three-phase sequential design (see Table 3.1 and Figure 3.1) was chosen as it allowed for an exploratory phase (phase one) where a large number of participants completed a demographic and family literacy survey, a pilot study phase (phase two) where a smaller number of participants were involved in an experimental intervention and a final phase (phase three) which provided a detailed exploration of the effects of a more comprehensive intervention with fewer cases. Concurrent methods were implemented during the second and third phases. The effects of the digital shared reading interventions were explored using

qualitative interviews and video-analyses, quantitative data, to provide a comprehensive description and analysis of the effects of such an intervention.

Table 3.1

*Overview of the Research Study*

| | Phase 1 | Phase 2 | Phase 3 |
|---|---|---|---|
| Adult | *n* = 45 | *n* = 24 | *n* = 8 |
| Groups | Comparison *n* = 21<br>Experimental *n* = | Comparison *n* = 12<br>Experimental *n* = 12 | Experimental *n* = 8 |
| Intervention | Not Applicable | Comparison Group: Traditional Print Texts<br>Experimental Group: | Experimental Group: Digital Texts |
| Methods | Survey | Pre-test-<br>Shared Reading Intervention-<br>Post-test | Pre-test-<br>Shared Reading Intervention and Monitoring-<br>Post-test-<br>Maintenance |

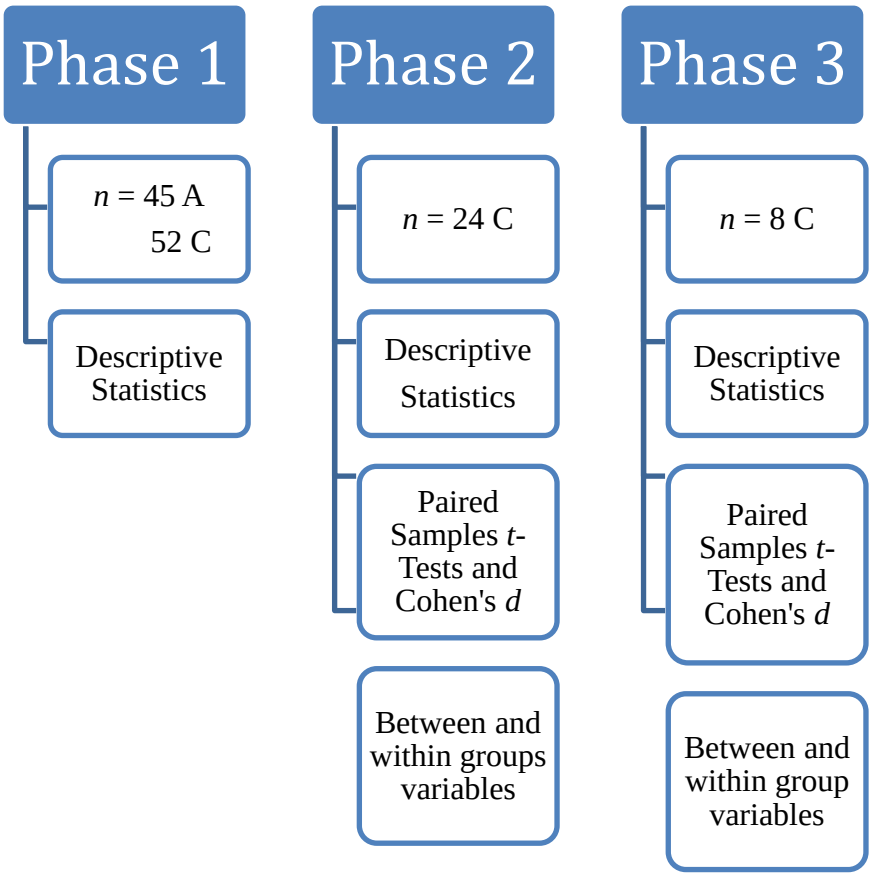


*Figure 3.1.* Overview of quantitative analysis plan in this study (A = adults, C = children).

**Ethical Considerations/Equity in the Design**

It is important to understand the conditions under which a child is assessed because as Snow and Van Hemel (2008) asserted, their score on a literacy test can "reflect the child's ease with the testing procedure, and the child's relationship with the tester" (p. 17). Furthermore, it is important to note that they also point out that these considerations are particularly important with younger children. The relationship between the participants and the researcher was an important consideration in the design of this study. It was imperative that the children felt comfortable with the researcher and that they were happy to participate in all assessment procedures. The rights of the child were respected at all times. Due to the lengthy procedure of administering the assessments, the children were given opportunities for free play between assessments. All assessments were carried out in the school and child and family centre

environments familiar to the child and adult participants. The researcher spent time with the children prior to administering the assessment measures, explaining the procedures and seeking verbal permission to proceed. Prior to the first day of the reading intervention, families were invited to the school to be with their child as the pre-tests were administered to the child participants. Although most parents did not choose to be present while their child was assessed, some parents chose to be there and appreciated the invitation.

To help eliminate tester bias, a second tester was recruited to collect pre- and post-intervention data during the phase two pilot study. The second tester, a Doctor of Philosophy candidate from the University of Tasmania, is a qualified early childhood teacher with a Bachelor of Education (Honours). She received training in the use of the assessment instruments during her undergraduate degree and later in preparation for the data collection of this study. The second tester did not receive any payment for her services. The researcher acted as the sole tester during the third and final phase of the study as it was decided that this would provide a more consistent and reliable approach, as the children would be more comfortable working with one adult who was familiar to them.

**Participants and Sampling Techniques**

A purposive sampling strategy was employed to recruit participants for the study. The strategy aimed to provide information rich cases relevant to the research questions and aims of the study. At the commencement of phase one, only one Tasmanian primary school was addressing the digital divide by implementing a one-to-one iPad programme where every student enrolled in the school received an iPad to use at school and at home. The number of invited participants for this study reflects the small size of the participating school and a statistically similar school. It was necessary to recruit participants from a statistically similar school to act as a comparison for phase one and phase two of the study.

**Inclusion Criteria for Participants**

Research frequently supports the premise that low reading achievement correlates with low socio-economic status (Snow, Burns, & Griffin, 1998); however, there is a growing body of research that suggests positive parental perceptions of education, and access to educational materials, are likely to mediate this phenomenon (Neuman & Celano, 2001; Whitehurst et al., 1994). Indeed, it has been demonstrated that it is possible to enhance and positively affect the

literacy environments of children from low-income families (Payne, Whitehurst, & Angell, 1994). Families were targeted to participate in the study, based on the Index of Community Socio-Educational Advantage [ICSEA] data on the My School website. The ICSEA scale represents levels of educational advantage; thus, the "value on the scale assigned to a school is the averaged level for all students in the particular school" (ACARA, 2011, p. 2). The scale is divided into quarters representing a range from relative disadvantage (bottom quarter) through to relative advantage (top quarter). The participating primary schools were situated in low socio-economic status areas of Tasmania. School distribution tables for both schools showed over 50% of the population in the bottom quarter of the ICSEA scale, with only 1% in the top quarter for one school and 0% in the top quarter for the comparative school. Families with male or female children aged between 3 years and 7 years in grades pre-kinder to grade two at the identified schools were invited to participate. This age range was selected to test children's development at an age when they are likely to be developing their emergent literacy skills.

**Recruitment Process**

Initially, information letters (Appendix A) were sent to the Principals at the two identified schools, inviting them to participate in the research. The researcher met with the principals and interested staff to discuss the project and answer questions related to the project. Both principals gave verbal and written consent (Appendix B) for their schools to participate. Information (Appendix C) and consent forms (Appendix D) were issued to all families with children enrolled in Pre-Kinder to Grade 2. Information sessions were held at both schools where potential participants had an opportunity to speak with the researcher, ask questions and read information forms and sign consent forms. Families unable to attend the information sessions were provided with the forms and self-addressed envelopes, enabling them to return completed consent forms at their convenience. All families were provided with the researcher's contact details and encouraged to contact the researcher with any questions or concerns.

**Assessment Tools**

To achieve deep understanding in case study research a variety of assessment tools are required. The assessment tools chosen for this inquiry facilitated analyses of children's literacy development across multiple time periods, direct observation by the researcher, and

probing by questioning adult participants about their beliefs and practices. Assessment tools included a family literacy, media and demographic survey (Appendix F), *Peabody Picture Vocabulary Test* (Dunn & Dunn, 2007), *Expressive Vocabulary Test* (Williams, 2007), *McNab Picture Vocabulary Test* (McNab, 2012), *Hundred Pictures Naming Test* (Fisher & Glenister, 1992), *Phonological Abilities Test* (Valerie Muter, Charles Hulme, & Margaret Snowling, 1997), *Concepts about Print* (M. Clay, 2007), *York Assessment of Reading Comprehension* (Hulme et al., 2012), a dialogic and digital reading inventory (Appendices H and I), and semi-structured parent interview schedules (Appendix E). Further information regarding the assessment tools used in each phase of the study will be detailed in Chapters Four, Six and Eight.

**Family Literacy, Media and Demographic Survey**

The researcher-created family literacy, media and demographic survey (Appendix F) was modeled on a media questionnaire designed by Robb (2010) for his doctoral research on the impact of an interactive book on young children's story comprehension and parent-child dialogic reading behaviours. The questions were adapted for the Australian context and tailored to address the aims of the present study. The survey contained both open and closed questions. Survey questions were piloted with a Faculty of Education staff member from the University of Tasmania and a teacher at the experimental group school to ensure that the language used on the form was clear, concise and accessible to members of the school community. Questions were posed for both traditional and digital reading practices. Examples of family literacy questions include, "How often do you, or other members of your family, read a book to your child in a typical week?" and "How often does your child 'read' or look at an e-book by him/herself in a typical week?" Examples of media questions include, "Please list any electronic book readers, if any, you own", and "What electronic book reader, if any, does your child use the most?" An example of a question addressing parents' perceptions is, "In general, do you think reading the following types of books (e-books or print books) mostly helps or mostly harms children's learning, or doesn't have much effect either way?". Examples of demographic questions include the following. "What is your relationship to the child in the survey?" "Is your child a boy or a girl?" "What is your child's age?" "How would you describe your ethnic background?" The survey also included an option to indicate interest in participating in the second and third phases of the study.

**Peabody Picture Vocabulary Test**

The *Peabody Picture Vocabulary Test, Fourth Edition,* [PPVT] Forms 4A and 4B (Dunn & Dunn, 2007) were employed to measure children's receptive vocabulary development. The parallel forms, A and B, are designed for more accurate retesting when measuring change and are, therefore, particularly suitable for the pre-test post-test design of the present study. The PPVT is a "norm referenced, wide-range instrument that is untimed and individually administered" (Dunn & Dunn, 2007, p. 1) consisting of 19 sets of 12 words arranged in order of increasing difficulty. Age-appropriate start items and basal and ceiling rules determine the child's ability levels. The child is presented with four pictures arranged on a page and points to the picture that matches the word spoken by the administrator. The test does not require an oral or written response, minimising the risk of stress for the child.

**Expressive Vocabulary Test**

*The Expressive Vocabulary Test, Second Edition,* [EVT-2] Forms 2A and 2B (Williams, 2007) were employed to measure the children's expressive vocabulary development. The EVT-2 "is an individually administered, norm-referenced instrument that assesses expressive vocabulary and word retrieval for children and adults aged 2 years and 6 months through 90 years and older" (Williams, 2007, p. 1). The EVT-2 is particularly suitable for progress monitoring, and a test-retest model of research, as it is available in two parallel forms (A and B). Each test kit consists of an easel, a manual, record forms and an EVT-2 Assist software programme for electronic scoring and interpretation. EVT-2 easels consist of three test examples followed by 190 items. One item, or picture, is displayed per page. The items are arranged in order of increasing difficulty and only the items that most closely approximate the child's ability level are administered. As for the PPVT, age-appropriate start items and basal and ceiling rules determine the child's ability levels. The test does not require the child to read, write, or give lengthy oral responses. The administrator shows the child an item from the test easel and reads a stimulus question. The child responds with a one-word answer that provides a label for the picture shown (for example: What do you see? What is he doing? Tell me another word for __ ?).

**McNab Picture Vocabulary Tests**

Previous studies measuring vocabulary development have revealed that standardised tests may not be sufficiently sensitive to vocabulary changes to be used as dependent measures (National Institute of Child Health and Human Development, 2000). Researchers measuring vocabulary development often create their own vocabulary assessment instruments (Pollard-Durodola et al., 2011; Whitehurst et al., 1994), because experimenter-generated instruments are more sensitive to vocabulary growth. It was thus decided that a researcher-created assessment instrument would form at least one component of the assessment process for the present study. The researcher developed the *McNab Picture Vocabulary Test*s (MPVT: McNab, 2012) as a measure of receptive vocabulary contained in the children's books employed during the pilot study (MPVT Form 1) and phase three shared digital reading intervention (MPVT Form 2). The MPVT tested the child's ability to not only learn and recall a word but their ability to generalise the word to a new context (see Sénéchal & Cornell, 1993 for an example of another study employing a similar test). The MPVT instruments were modeled on the style of the PPVT. Ten words were chosen from each of the books given to the families for the shared book reading interventions. The words were deemed to be either novel or difficult for the children participating in the study when analysed against the Oxford Word List (Lo Bianco, Scull, & Ives, 2008). The *Oxford Wordlist* is the result of an extensive and rigorous Australian research study that investigated high frequency words in young children's writing and reading development. The *Oxford Wordlist* was "prepared from a database far larger and more representative than any Australian and most international predecessors" (Lo Bianco et al., 2008, p. 16) and can be tailored to the demographic of the students using the selection criteria in the online interactive tool. The selection criteria for generating demographically sensitive word lists included words such as: gender; school year; language; school setting; location; and text type. Words from the MPVT tests included words such as: marsupial; bureau; ravenous; cellar; frond; whirled; and well. These were words that appeared in the children's stories.

The tests were piloted with a Faculty of Education Staff member, a mother, a father, a high school student and a primary school student to ensure the pictures clearly and concisely depicted the target words. The pictures were refined in response to their feedback. Each page of the MPVT contains four pictures, one picture representing the target word and three pictures that serve as item distractors (see Figures 3.2 and 3.3 for examples). The pictures

used for the MPVT were not taken directly from the picture books employed for the shared reading interventions, for as Horst, Parsons, and Bryan (2011) asserted, "testing with different pictures forces children to extend their newly formed name-object associations to a new representation of the referent" (p. 3). Selecting different pictures from those featured in the books thus ensured that the child's ability to generalise new words to other contexts could be tested; for example, the word may be represented in the book as a photo but represented in the test as a line drawing. The MPVT Form 1 consists of four sets of ten words, with a total of 40 words. The MPVT Form 2 consists of nine sets of ten words, with a total of 90 words. The MPVT tests are administered in the same way as the PPVT; the child points to the picture that matches the word spoken by the administrator. The child does not need to speak, as pointing at the word is sufficient. Figures 3.2 and 3.3 are pages from MPVT-1 and MPVT-2 respectively.


*Figure 3.2*. MPVT-1 example target word: well (2).

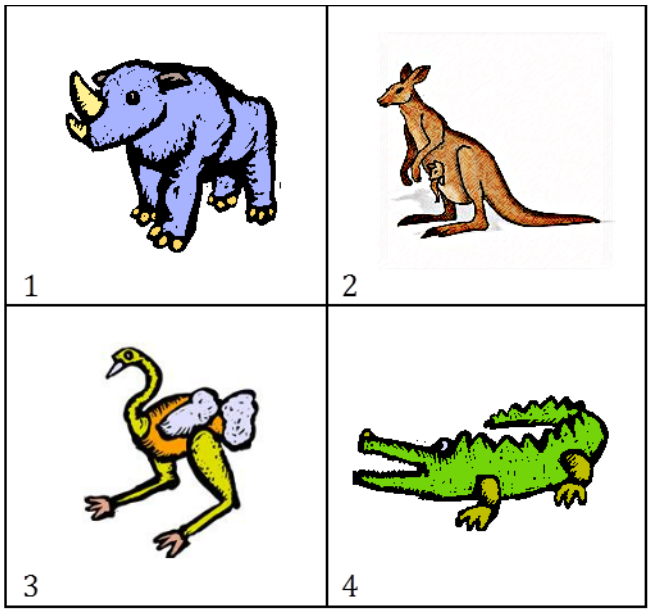


*Figure 3.3* MPVT-2 example target word: marsupial (2).

**Hundred Picture Naming Test**

Expressive vocabulary and rapid naming ability were assessed with the *Hundred Picture Naming Test* [HPNT] (Fisher & Glenister, 1992). The HPNT is an Australian timed confrontation-naming test suitable for infants to adults. The kit includes a book of 100 black and white line drawings, a manual and response forms. Each page of the test book contains a picture of one noun object. The child is presented with one page at a time and asked to name each item. The test may be timed to enable a rapid naming ability score.

**Phonological Abilities Test**

Children's phonological skills were assessed with the *Phonological Abilities Test* [PAT] (Muter, Hulme, & Snowling, 1997). The PAT is a measure of skill areas that have been identified as strong indicators of literacy success. It consists of four main subtests: (1) Rhyme Detection (foot, bike, coat. What rhymes with boat?); (2) Rhyme Production; (3) Word Completion (Syllables [ta-ble = bl] and Phonemes [hor-se = s]); and (4) Phoneme Deletion (Beginning Sounds [meat without the m says it] and End Sounds [meat without the t says mi]). Speech Rate and Letter-Knowledge subtests are also included. The test is suitable for children from 4-years to 7-years. The PAT kit includes a manual, stimulus book, and record

forms. The child is required to give a spoken response to each of the questions.

**Concepts About Print**

Children's attention to print and understandings about conventions of print were assessed with the *Concepts about Print* [CAP] test (Clay, 2000). The CAP test is an observational measure of the skills children obtain through exposure to books: book orientation; direction of print; one-to-one matching of spoken words to printed words; common punctuation marks; identifying letters and words. It is suitable for children in the early years of school as a check on early reading progress. The administrator sits beside the child and asks the child to help read a story by pointing to specific features in the text or answering questions. For example, the administrator will say, "Show me where to start reading? Where will I begin? Which way do I go? Point to it while I read it. What is this punctuation for? What's wrong on this page?" There are four alternative stories that can be used for the assessment (Sand, Stones, No Shoes and Follow Me Moon), making it particularly suitable for the multiple phase, pre-test-post-test design of the present study. An administrator guide with a prescribed set of questions and specific directions guides the assessment process from observation through to scoring and interpretation of scores.

**York Assessment of Reading Comprehension**

The Australian Editions of the *York Assessment of Reading for Comprehension Early Reading* (Hulme et al., 2012) and *Passage Reading* (Snowling et al., 2012) tests are designed to assess and monitor children's reading development. The tests are standardised and norm-referenced. As the name suggests, the *YARC Early Reading* test is most suitable for young children developing early reading skills and its companion test, the *YARC Passage Reading* test is most suitable for older children or children who have developed some decoding skills.

The *York Assessment of Reading for Comprehension* [YARC] *Early Reading* tests are suitable for children aged 4-years to 7-years and designed to assess children's knowledge of, and understandings about, the core skills that underpin alphabetic literacy. The *YARC Early Reading* assessment is comprised of four tests: letter sound knowledge; early word recognition; sound isolation; and sound deletion.

*YARC Passage Reading* is most suitable for children aged from 5-years to 12-years and designed to assess children's reading fluency, accuracy and comprehension. The test is

comprised of a set of fiction and non-fiction reading passages. Each graded passage is accompanied by a set of eight literal and inferential comprehension questions. *YARC Passage Reading* has equivalent forms (A and B) making it particularly suitable for the pre-test-post-test design of the present study.

**Dialogic and Digital Reading Inventory**

An analytic framework for observing parent and child engagement with digital books and dialogic reading behaviours was required for analysis of the parent-child shared reading video data. The dialogic and digital reading inventory created for this study was informed by DeBruin-Parecki's (2009) *Adult/Child Interactive Reading Inventory* [ACIRI] and adapted from the *Dialogic Reading Inventory of Parent-child Book Reading* (Dixon-Krauss, Januszka, & Chae, 2010) and a *Typology for Observing Children's Engagement with e-books* (Roskos, Burstein, & You, 2012). The dialogic and digital reading inventory (Appendices H and I) was designed to yield descriptive and enumerative evidence of child and parent engagement with e-books and dialogic reading behaviours. Five categories formed the basis of the framework: control; multisensory behaviours; communication; attention to print; and support. All children and parents were videotaped reading either print books (comparison group) or e-books (experimental group). All videos were analysed with QSR International's NVivo10 software. Each video was initially viewed from beginning to end to give the researcher an overall picture of the reading behaviours. The videos were then scanned for evidence of adult and child behaviours using the categories and salient behaviours defined in the dialogic and digital reading inventory. Quantitative scores and qualitative comments were added to the inventory as the behaviours appeared on the video. The researcher analysed each video twice to ensure that calculations and qualitative comments accurately reflected the parent-child reading.

Reading Questionnaires

Reading questionnaires were created in a tick sheet format for each of the books given to the families for the shared reading interventions (See Table 3.2 and Appendix J for examples). The questionnaires were developed to encourage a quick and easy way for parents to record the frequency and duration of reading episodes associated with the intervention. Parents were asked to refer to the sheet each time their child engaged with the books and tick the boxes to provide an overview of the experience. Questions were formulated by the researcher in

consultation with a Faculty of Education staff member and a teacher from one of the target schools to ensure the language and layout was easy to understand and accessible for the adult participants. Each questionnaire contained information on: (i) the study details; (ii) a picture of the app or book they were reading; (iii) the title of the book; (iv) instructions for completing the form; and (v) a daily record for each week of the study (see Table 3.2). Parents were asked to indicate how enjoyable the experience was for both the child and the adult by shading stars on the sheet; 1 star represented a not very enjoyable experience and 5 stars represented a very enjoyable experience. The questionnaire also asked if the child or adult instigated the reading.

Table 3.2

*Daily Record for Each Week of the Study on the Child's Reading*

| Question | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|---|---|---|---|---|---|---|---|
| Child asked to read or instigated the reading. | | | | | | | |
| Adult or another child instigated the reading. (Please indicate who) | | | | | | | |
| How long did the child read/share the book for? (Minutes) | | | | | | | |
| Did you read/share the book with the child? | | | | | | | |
| Did the child read/experience the book independently? | | | | | | | |
| How enjoyable was the experience for the child? | | | | | | | |
| How enjoyable was the experience for the adult? | | | | | | | |

## Parent Interview Schedules

The semi-structured parent interview schedules (Appendix E) contained both open-ended and closed questions and were designed to allow participants to speak freely of their home shared reading experiences and perceptions of iPads in literacy education. The interviews provided the researcher with opportunities to validate data collected through the reading questionnaire and gain a deeper understanding of participants' experiences and perceptions of the shared book reading experience, families traditional and digital reading practices, and perceptions of iPads in literacy education. Examples of questions from the interview schedules include, "Has your opinion about iPads in education changed since your child started using the iPad at home? How has it changed and why?" and "Can you suggest ways in which the school could assist you to support your child's literacy learning with the iPad and e-books?" Many of the interview questions require the participant to reflect on their experience of reading e-books on the iPads. Examples of this include, "Please think about how often your child asked to be read to before you started reading e-books on the iPad and compare that with how often they asked to be read to during the past six weeks. Has this changed and, if so, why do you think it has changed?" and "Please describe what usually happens when you share a story with your child" and "Has the way you read with your child changed because of what you have learnt during the group sessions we had together and if so, how has it changed?".

## Credibility and Authenticity

It must be acknowledged that whilst the design of this study included an experimental intervention and a "rigorous and controlled search for cause and effect" (O'Leary, 2010, p. 107) it was not possible to control all the variables. The interventions were not conducted in a laboratory setting. Rather, to ensure an authentic experience, the interventions were carried out in the schools and families' homes. It was, therefore, impossible to control all the variables; however, the design of the study ensured that the variables were limited. All children, in both the experimental and comparison groups, received the same book titles, for the same length of time, at the same time. This need to become very familiar with what was occurring in the home in terms of the children's reading is related to Creswell's (2009) observations. Creswell maintained that "the more experience that a researcher has with the participants in their actual setting, the more accurate or valid will be the findings" (p. 192). During the third phase of the study, the researcher spent time with the participants regularly.

During the 10-week intervention, the researcher visited the school and community centre to facilitate the weekly two-way knowledge exchange sessions over a six week period. The school and community centre both offered a safe and familiar environment in which the participants could meet with the researcher and fellow participants. Furthermore, the researcher collected all data associated with the third phase of the study and thus regularly spent time with adult and child participants.

**Reliability and Validity Procedures**

Interview transcripts were double checked by the researcher to ensure that they did not contain errors as a result of the transcription process. Transcriptions were then forwarded to the participants for member checking, a procedure suggested by Creswell (2009), to ensure that the transcriptions provided an accurate, and therefore valid, account of the interviews.

Coding definitions were created and all interviews coded by the researcher ensuring consistency. The triangulation of interview, observation and literacy assessment data enhanced the researcher's ability to assess the accuracy of the findings and thus contributes to the validity of the findings. Repeated observations and assessments during phase three enabled the children's literacy development to be monitored over time and patterns to be established.

**Conclusion**

Chapter Three has provided background information and a methodological overview of this three-phase study. The following chapter, Chapter Four will detail specific information pertaining to the methodology for phase one. Chapters Six and Eight will detail the methodologies of phase two and phase three respectively.

# Chapter 4 Phase One Methods

This chapter briefly details and justifies the data collection, assessment methods and tools, and analysis procedures employed during phase one of the research project.

## Phase One Aims

The primary aims of the first phase of the study were to capture a picture of the traditional and new reading practices of families and their young children in the two Tasmanian target schools, particularly the technologies they were using to engage their children in reading books, and to recruit families to participate in the second phase of the study. A secondary aim was to investigate parents' perceptions of iPads in literacy education. Families from the two schools with low ICSEA values, as described in Chapter three, were invited to participate in phase one of the study. Families from the school implementing a one-to-one iPad initiative formed the experimental group and families from the school not currently implementing iPads formed the comparison group.

## Phase One Data Collection

The researcher held information sessions at the experimental group school and the comparison group school. All families with children enrolled in Pre-Kinder to Grade Two were invited to attend. The researcher introduced herself to the school communities, gave an oral and power point presentation about the research project, and provided an opportunity for members of the school communities to ask questions. Information and consent forms were distributed to the attendees. Families choosing to participate in the research were provided with a *Family Literacy, Media and Demographic* survey (Appendix F) and a self-addressed, reply paid envelope. Families voluntarily completing the survey had the option of returning the information, consent and survey forms to the researcher after the session, or returning the forms in the reply paid envelopes at their convenience. Attendance at the experimental group school session was high, with teachers commenting that the majority of families were represented by a family member at the meeting. The Principal at the comparison group school requested that information and consent forms be sent home with the school newsletter, prior to the information session being offered. Attendance was not as high at the comparison group school with most families choosing to complete the forms at home and return them to the researcher in the reply paid envelopes. All families were provided with the researcher's email

and phone details and encouraged to contact her with any questions or concerns. Families attending the information session were able to choose a children's picture book for their child to keep. The book was given to families as a token of appreciation for attending the information session and/or completing the survey. Families were not informed that they would receive a book prior to attending the session or receiving the information and consent forms. Families not attending the sessions were given a book when the forms were returned.

**Phase One Data Analysis Procedures**

The purpose of the *Family Literacy, Media and Demographic* survey was to gather baseline data and explore and generate themes about the families' reading practices and beliefs about iPads in education. The initial survey data were collated and analyses using IBM's *Statistical Product and Service Solutions* (SPSS) predictive analytical software. The data were analysed to identify the demographic information pertaining to the participants: parent and child gender, adult's highest level of education, child's age, and adult's ethnic background. The types of electronic reading devices young children were using were examined and the frequency (how often) and duration (how long) children were engaging in traditional and electronic reading experiences in the home were established. Children's favourite traditional and digital book titles were identified and these data were used to inform the book selection process for the phase two and phase three shared reading interventions. The survey provided a broad overview of parental beliefs regarding the value of their children reading traditional and digital texts and their beliefs regarding the effect of using an iPad at home and at school.

This chapter has detailed the aims of the first phase of the study and the methods employed to address these aims during this initial phase. The following chapter will detail the findings of the Family Literacy, Media and Demographic survey.

# Chapter 5 Phase One Results

This chapter presents the results of the Family Literacy, Media and Demographic surveys that were completed during phase one of the study. Child participants' demographic information, including age and gender, and adult participants' gender, ethnicity, and education background will be detailed. The frequency and duration of daily and weekly shared and independent reading experiences will be reported. The chapter will conclude with an overview of adult participants' beliefs regarding the effects of using iPads at school and at home.

## Phase One Descriptive Analysis

Forty-five adult participants, of which 44 were female and one was male from two schools completed the 52 Family Literacy, Media and Demographic surveys that are included in this analysis. In terms of Ethnicity of the 38 participants who responded to this question , 33 identified as being white Caucasian and 5 identified as being Aboriginal or Torres Strait Islander. The two groups, experimental and comparison, had similar educational backgrounds with all but two of the participants completing high school (Year 12) and about half the cohort having either a Vocational College or a University award.

Participants were asked to complete a separate survey for each of their children in grades Pre-Kinder to Grade 2. The gender of children was similar between the two groups with 48% of the children being boys and 52% girls for both cohorts. Children's ages ranged from 3 years and 11 months to 8 years and 9 months, with the mean age across the participants 8 years 7 months (Standard Deviation 1 year and 3 months).

## Family Reading Behaviours and Beliefs

In terms of who helped in the shared book reading, feedback from the participants identified that mothers were the main people involved with shared book reading, ($n$ = 30 for mothers) see Figure 5.1. The second most common response was mothers and fathers who cooperated in doing the shared book reading activity ($n$ =13 for combination of mothers and fathers).

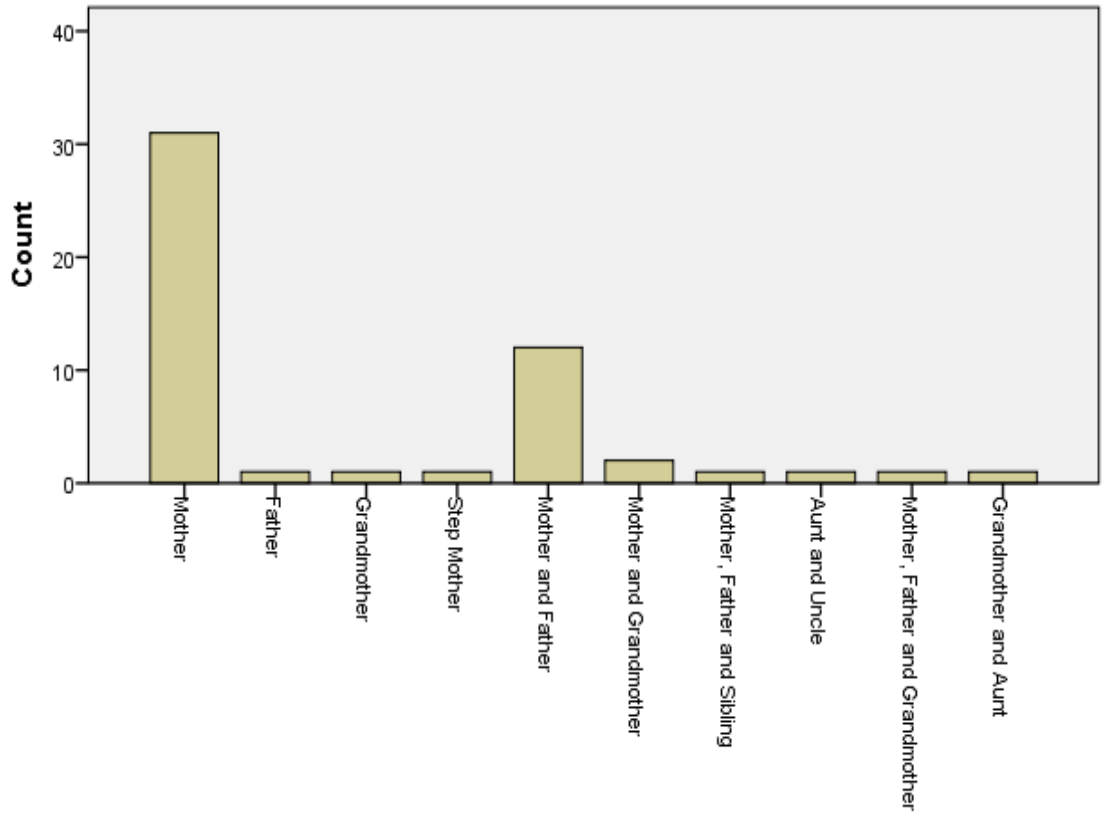


*Figure 5.1.* Person who usually reads with the child.

Records were kept as to the type of book (either digital or paper) that the experimental and the comparison groups read, and whether they were engaged in shared book reading with someone or they were doing independent reading by themselves. As outlined in Table 5.1, there is a similar pattern for both the experimental and the comparison group. Both cohorts of students were engaged in print and digital books and were using both for independent and shared book reading. More of the readers were however using more print books, which may reflect their availability for both cohorts.

Table 5.1

*Frequency of Book Reading by Group and Type of Book*

| Group | Independent Book Reading | | Shared Book Reading | |
|---|---|---|---|---|
| | Print | Digital | Print | Digital |
| Experimental | 21 | 7 | 25 | 4 |
| Comparison | 19 | 6 | 24 | 4 |

From both the comparison group and the experimental group at the start of the programme the majority of parents (82%) did not read a digital book with their children. Of the four parents who did read a digital book to their child, two of them read for around 15 minutes a day with their children and two for around 30 minutes a day. This information suggested that shared book reading using digital books is still not a common practice in homes. In terms of print books, conversely, almost 50% of adults spent 15 minutes and almost 20% spent 30 minutes or more reading a traditional print book to their child, with only 4% indicating that they did not read print books with their child on a typical day.

Mobile e-Reader device ownership and usage varied across the group, with the most popular being DVD Players (26%), iPads (21%) and Leap Frog children's devices (21%). It is important to note that the statistics for this question do not indicate if the devices were used to read books. They only indicate that participants are using devices that have the capacity to be used to access digital books.

Although 96% of parents believed that reading traditional books with children has a positive effect on learning, only 44% believed that reading digital books to children has a positive effect. More than half the parents were unsure about the effects of reading digital books with children.

# Chapter 6 Phase Two Methods

Chapter six details the research design of Phase Two of the study. The chapter begins with an overview: outlining the three main goals, detailing elements of the research design, and describing the shared reading intervention that is central to this phase. The chapter continues with an explanation of data collection procedures and concludes with an account of the data analysis procedures employed for Phase Two.

## Phase Two Overview

The goals of Phase Two were to:

(a) implement a pilot digital shared reading intervention,

(b) evaluate the effects of the intervention and

(c) gather baseline data to inform the third and final phase of the study.

The ABC research design (pre-test – intervention – post-test) enabled an examination of the effects of the shared reading intervention utilising 24 participants, of whom 15 were female, with an age range that extended from 61-92 months (Mean = 76 months, Standard Deviation = 9 months). Families were selected from the original Phase One sample (See Tables 6.1 and 6.2 for demographic details). The participants were divided into two groups, with 12 in a comparison group and the other 12 in an experimental group. Families, from the school implementing iPads, formed the experimental group and read digital texts and the same number of families, from the school not implementing iPads, formed the comparison group and read traditional (print) texts.

Table 6.1

*Age of the Cohort Groups Phase Two*

| Participants | *n* | Range | Youngest | Oldest | M | SD |
|---|---|---|---|---|---|---|
| Experimental | 12 | 27 | 61 | 88 | 78.17 | 7.98 |
| Comparison | 12 | 26 | 61 | 87 | 73.5 | 8.86 |
| Total | 24 | 27 | 61 | 88 | 75.83 | 8.59 |

Table 6.2.

*Participants' Gender and Grade*

| | Experimental | | Comparison | |
|---|---|---|---|---|
| Grade | Male | Female | Male | Female |
| K | 0 | 1 | 2 | 1 |
| P | 1 | 4 | 2 | 3 |
| 1 | 3 | 3 | 2 | 2 |
| | *n* =12 | | *n* = 12 | |

A wide range of measures was administered to determine the effects of the intervention on the children's literacy development and families' reading practices. The pre-test-post-test treatment and comparison group design involved the administration of pre-tests, shared reading treatments, and post-tests to both groups. Both groups were given the same literacy pre-tests and post-tests, and they were both tested during July and August, the second school term of the year. The families participated in a six-week shared reading experience with either digital (treatment group) or traditional print (comparison group) children's picture books. Interviews and observations were administered post-test for both groups. The experimental group received the experimental treatment, digital books on iPads, and the comparison group received an alternative treatment, traditional print books.

The selection of books for the interventions was particularly important. The primary focus was not to entertain or distract children and their families from the original essence of the story, rather the focus was on the integration of digital books into an ecology of sharing and learning. The aforementioned findings of Takeuchi and Stevens (2011) and Scholastic (2012) informed the book selection process (see Chapter Two for details). The books selected for the intervention fulfilled the requirements of the study in that they promoted the development of children's early literacy skills, such as: rhyme awareness; print knowledge; fluency; sight words; phonological awareness; alphabet knowledge; and vocabulary (Farstrup & Samuels, 2002; National Early Literacy Panel, 2008; Song et al., 2015). The books represented a variety of genres and interactive features that were chosen to appeal to a wide range of children. The books included fiction, alphabet, rhyme, and information books. The interactive features varied between the books, with the least interactive book containing only one interactive element and the most interactive book containing eleven. None of the books

contained videos or interactive games. The decision to include the Dr Seuss' ABC alphabet book was influenced by the findings of the Murray, Stahl, and Ivey (1996) study that revealed greater gains in phonemic awareness when children read alphabet books with example words to demonstrate letter sounds compared with children who read alphabet books without example words.

The shared book reading intervention involved families sharing the books with their children, in their own home, and recording the details of each shared reading experience on a reading questionnaire. Each family received a book pack (see Figure 6.1 for an example) consisting of four books, (traditional print books for the comparison group and the same titled books in digital format for the experimental group), reading questionnaires (Appendix J), pens to complete the questionnaire, and a visual reminder (Appendix G) in the form of an A4 calendar fridge magnet complete with pictures of the four books, and dates of the pre-tests, reading intervention and post-tests. The books selected for this phase were *Each Peach Pear Plum* (Ahlberg & Ahlberg, 2011), *Dr Seuss' ABC* (Seuss, 2010), *Elmer's Special Day* (McKee, 2011), and *Hip Hop the Frog* (Kitzelman & Kitzelman, 2010).


*Figure 6.1.* Comparison group shared reading intervention book pack.

Families were free to read the four books as often as they wished. There were no requirements regarding the minimum or maximum number of readings during the six-week intervention. Families were asked to ensure that they recorded how (independent or shared

reading) and how often their child read each book on the reading questionnaire. Parents did not receive any training or support during this intervention in phase two.

**Phase Two Data Collection**

During the second phase of the study four types of data were collected: tests of early reading skills, semi-structured interviews with parents and teachers, videos of parents sharing books with their children and a self-reported reading behaviours survey (see Table 6.3 for timeline details). The tests of early reading skills provided quantitative data about children's pre- and post- intervention vocabulary development, concepts about print knowledge and phonological abilities. Pre-test and post-test measures for phase two included PPVT-4A and 4B, HPNT, MPVT, CAP and PAT. The semi-structured interviews provided information about parents' beliefs regarding iPads in education and digital texts, families' reading behaviours prior to as well as during the intervention, and demographic information. The shared reading videos provided qualitative data about families' shared reading behaviours. Outcome measures were divided into two categories: language and early literacy skills. To help eliminate tester bias, a second tester was recruited to collect pre- and post-intervention data during phase two. As previously mentioned, the second tester, a Doctor of Philosophy candidate from the University of Tasmania, is a qualified early childhood teacher with a Bachelor of Education (Honours). She received training in the use of the assessment instruments during her undergraduate degree and later in preparation for the data collection of this study. The second tester did not receive any payment for her services.

Table 6.3

*Tests and When Administered*

| | Pre-Test T1 (Time 1) | Monitoring | Post-Test T2 (Time 2) |
|---|---|---|---|
| PPVT-4A | ✓ | | |
| PPVT-4B | | | ✓ |
| HPNT | ✓ | | ✓ |
| CAP | ✓ | | ✓ |
| MPVT-1 | ✓ | | ✓ |
| PAT | ✓ | | ✓ |
| Semi-structured Interview | | | ✓ |
| Reading Behaviour Survey | | ✓ | |
| Dialogic and E-book Reading | | | ✓ |

**Phase Two Data Analysis**

The first step in analysing the data from this pre-test-post-test comparison group experiment was to compute descriptive statistics. Analyses were performed using IBM's Statistical Product and Service Solutions predictive analytical software (SPSS) and descriptive statistics were computed for age (Table 6.2), gender and grade (See Tables 6.1 and 6.2 above). Mean scores were computed for the pre-test and post-test literacy measures for both groups. T-Tests were conducted to examine the pre- (Time 1) and post- (Time 2) test early-reading assessment scores and to test for statistical significance (Gall et al., 2007). To overcome issues with the small sample size and to create additional robustness, Cohen's *d* was also conducted to determine the intervention effect sizes.

Ten parents from the experimental group were individually interviewed. Nine of the adults interviewed were mothers, although one father was present. Interview data were analysed using QSR International's NVivo10 software.

**Conclusion**

This chapter has detailed the methods employed to examine the effects of digital (experimental) and traditional (comparison) shared reading interventions on children's early literacy development. The inclusion of the comparison group allowed for comparisons to be made between the effects of families reading print books in the traditional format and the

effects of families experiencing new ways of reading with digital books on iPads. The following chapter, Chapter Seven, will detail the results of phase two analyses. Given that the analyses focuses both on single participants and also multiple participants, the chapter will provide information about repeated measures outcomes both in terms of individual participants and also in terms of multiple participants (participants treated as group/sample). However, the summary neglects single participant outcomes in favour of multiple-participant outcomes. Single participant analyses were presented with the participants split into comparison and experimental groups (effect for treatment group) and with outcomes measured at Time 1 and Time 2 (effect for occasion). The hypothesis being tested here is the effectiveness of digital e-books.

# Chapter 7 Phase Two Results

In this chapter, three main research questions will be addressed:

1. What are the effects of reading digital texts on young children's early literacy development and does this differ from traditional reading practices?

2. How are parents using digital books with their children?

3. What are parents' perceptions of the digital shared reading intervention?

First, the chapter begins with a broad overview of the literacy assessment results obtained during phase two of the study. Second, detailed results pertaining to each of the literacy assessments are presented. Third, an overview of the semi-structured interview findings is provided. The chapter concludes with an overview of the findings from analysis of the shared reading videos.

Phase two examined the effect of a shared reading intervention utilising 24 participants, of whom 15 were female and nine were male, with an age range that extended from 61-92 months (Mean = 76 months, Standard Deviation = 9 months). The participants were divided into two groups, with 12 children in a comparison group (who received their regular reading programme and worked on traditional print texts) and the other 12 children in an experimental group (who worked on the digital texts).

**Literacy Assessments Results**

To investigate the effectiveness of the digital reading experience on children's literacy and language development a series of tests were administered to the participants in the programme and to the participants in the a contrast cohort of children who received their regular classroom programme. The changes on children's performances on these measures from at the start of the intervention to the completion of the intervention were examined using comparison of means and independent paired *t* tests.

As reported in the following tables, both cohorts of children produced similar achievement profiles on the assessment instruments. The children's receptive language (*Peabody Picture*

*Vocabulary Test*) raw scores and their expressive language (*Hundred Picture Naming Test)* raw scores significantly improved by the end of the intervention period.

The children's raw scores on the *Concept about Print* assessment task also demonstrated significant statistical improvements for both cohorts of children by the end of the intervention period.

On the eight *Phonological Abilities tests* significant improvements were identified for two of the subtests, the *Phoneme Deletion Beginning Sounds* test and the *Speech Rate* test for both cohorts of children. It needs to be noted that the lack of significant difference on many of the *Phonological Abilities test results* was likely to be because of ceiling effects associated with these tests. That is within each of cohorts the children had already demonstrated a competency on that subtest and so no significant growth of ability was able to be measured. For example, in terms of naming the letters of the alphabet most of the children could name these 26 letters at the start of the intervention and so no significant statistical improvement was recoded on this test at the completion of the intervention. This ceiling effect is also likely to be occurring for the rhyme detection test and the rhyme production test.

These results from this phrase of the research demonstrate that the digital reading activities produced similar literacy and language achievement outcomes to traditional reading programme activities. That is both traditional book texts and e-books and their associated home and school reading strategies produced similar test outcomes for children at the beginning stage of learning to read process. A summary of the pre intervention and the post intervention test language and literacy test results are displayed in Tables 7.1 and 7.2. Table 7.1 reports on the comparison of pre and post intervention means on the language and literacy measures for the children in the digital reading programme. Table 7.2 reports on the comparison of pre and post intervention means on the language and literacy measures for the children in their regular reading programme.

Table 7.1

*Comparison of Pre and Post Intervention Means on the Language and Literacy Measures for the Digital Reading Cohort, N* = 12

| Name of Test | Pre Test Mean | Pre Test SD | Post Test Mean | Post Test SD | *t* (*df* =11) | Sig |
|---|---|---|---|---|---|---|
| *Peabody Picture Vocabulary Test* (Receptive language) Raw Scores | 108.00 | 16.89 | 118.1 | 18.09 | 3.32 | 0.00** |
| *McNab Picture Vocabulary Test* Raw Scores | 33.67 | 2.81 | 33.58 | 2.97 | 0.94 | 0.93 |
| *Hundred Picture Naming Test* (Expressive language) Raw Scores | 86.75 | 7.60 | 89.00 | 6.82 | 3.00 | 0.01** |
| *Hundred Picture Naming Test* time in seconds | 229.6 | 31.01 | 246.8 | 48.93 | 1.13 | 0.28 |
| *Concept About Print Test* Raw Scores | 15.42 | 4.52 | 17.67 | 4.29 | 3.22 | 0.00** |
| *Phonological Abilities Test* Rhyme Detection | 7.45 | 3.35 | 8.09 | 3.39 | 1.21 | 0.25 |
| *Phonological Abilities Test* Rhyme Production | 5.27 | 3.90 | 6.00 | 4.87 | 0.95 | 0.36 |
| *Phonological Abilities Test* Syllables Completion | 7.0 | 1.04 | 6.8 | 1.36 | 1.11 | 0.29 |
| *Phonological Abilities Test* Phonemes Completion | 7.18 | 1.53 | 6.7 | 2.46 | 1.34 | 0.21 |
| *Phonological Abilities Test* Phoneme Deletion Beginning Sounds | 5.27 | 3.28 | 6.09 | 2.95 | 2.17 | 0.4* |
| *Phonological Abilities Test* Phoneme Deletion End Sounds | 6.18 | 2.64 | 5.65 | 2.64 | 1.16 | 0.28 |
| *Phonological Abilities Test* Speech Rates | 1.20 | 0.19 | 1.40 | 0.19 | 4.04 | 0.00** |
| *Phonological Abilities Test* Letter Knowledge | 23.36 | 6.43 | 23.45 | 6.29 | 0.36 | 0.72 |

*$p$<.05, **$P$<.01, ***$p$<.001

Table 7.2

*Comparison of Pre and Post Intervention Means on the Language and Literacy Measures for the Regular Reading Cohort, N* = 12

| Name of Test | Pre test | | Post test | | *t* | |
|---|---|---|---|---|---|---|
| | Mean | *SD* | Mean | *SD* | (*df* =11) | Sig |
| *Peabody Picture Vocabulary Test* (Receptive language) Raw Scores | 105.83 | 12.8 | 114.9 | 13.0 | 2.47 | 0.03* |
| *McNab Picture Vocabulary Test* Raw Scores | 33.50 | 1.88 | 34.25 | 3.46 | 0.85 | 0.42 |
| *Hundred Picture Naming Test* (Expressive language) Raw Scores | 86.08 | 3.91 | 88.67 | 3.47 | 2.35 | 0.03* |
| *Hundred Picture Naming Test* time in seconds | 267.00 | 47.9 | 269.7 | 62.1 | 0.17 | 0.86 |
| *Concept About Print Test* Raw Scores | 14.33 | 4.22 | 17.42 | 4.05 | 7.09 | .00** |
| *Phonological Abilities Test* Rhyme Detection | 8.00 | 3.25 | 8.33 | 2.53 | 0.60 | 0.56 |
| *Phonological Abilities Test* Rhyme Production | 6.80 | 4.05 | 6.75 | 3.75 | 0.21 | 0.84 |
| *Phonological Abilities Test* Syllables Completion | 6.58 | 1.50 | 6.50 | 1.08 | 0.19 | 0.85 |
| *Phonological Abilities Test* Phonemes Completion | 5.42 | 3.17 | 6.42 | 2.50 | 1.59 | 0.14 |
| *Phonological Abilities Test* Phoneme Deletion Beginning Sounds | 3.08 | 3.72 | 3.92 | 3.75 | 2.16 | 0.04* |
| *Phonological Abilities Test* Phoneme Deletion End Sounds | 4.08 | 3.31 | 4.67 | 3.25 | 1.24 | 0.24 |
| *Phonological Abilities Test* Speech Rates | 1.26 | 0.13 | 1.37 | 0.14 | 2.94 | 0.01* |
| *Phonological Abilities Test* Letter Knowledge | 18.17 | 8.86 | 19.08 | 7.93 | 0.95 | 0.36 |

*$p<.05$ ***$P<.001$

**Parent Interviews**

The parent interviews addressed the research question considering the most effective ways for schools to support parents as they engage their children in digital books and reading that promotes literacy development. The interviews also addressed the question regarding parents' perceptions regarding iPads in education. Of the twelve families in the experimental group involved with the e-books, nine families chose to be interviewed.

Parent responses to interview questions suggest that for the digital shared reading intervention to be successful in the future, a wide variety of texts are required to cater for the diverse preferences of young children. When asked to nominate their child's favourite e-book, the answers were primarily restricted to one of the four books provided for the shared reading intervention, indicating families' limited experience with digital texts. Parents were also asked to identify their child's favourite print books and participants' preferences varied, from popular fiction titles such as Disney and LEGO to non-fiction books about flowers and trucks, confirming that the inclusion of a variety of genres in the shared reading programme is an important element. One parent reported that her son had only read the four e-books once during the six weeks, despite being an avid reader and frequently using the iPad for games. Her son said that the books were not very interesting so she noted it was a struggle to motivate him to read. This finding aligns with those of Fielding-Barnsley and Purdey (2002) who also identified that including different genres was an important component of the reading programme design.

When asked to suggest ways the school could help parents with their children's literacy development or using an iPad with their child, participants' views varied. The benefits of school information sessions and handouts were discussed. Several parents acknowledged that they would appreciate information about the mechanics of using an iPad and information about specific apps, and others were unsure if they required any support at all. A recurring theme was children's independent use of the iPad. If children were happy and able to engage with the iPad independently, it was believed they did not require assistance from an adult. Two parents felt the school was currently providing adequate information and this may be attributed to the school information sessions. At the time of this intervention, the school was implementing regular parent sessions to provide information about iPads for education. The small group sessions were particularly useful for one participant who believed the school was

doing a "top job" of supporting her as a parent to use the iPad with her child. Information she received from other parents attending the sessions reassured her that she was not the only one learning to use the iPad for the first time. The parent appreciated being able to work things out with other mothers and with the assistance of the teacher hosting the session. For this parent, the sessions served to empower her to assist her children with their literacy development using a tool with which she was previously unfamiliar. It is important to note that the sessions discussed in the interviews were not connected to the shared reading intervention that is the focus of this study. The sessions were part of the whole school one-to-one implementation plan and did not provide specific information about reading digital texts with children.

All of the parents who were interviewed believed that using an iPad at home has a positive effect on children's learning, with three of the nine parents indicating that reading frequency increased during the six-week intervention. One parent indicated that her daughter had doubled the amount of time spent reading during the intervention. Parents cited access to books and increased engagement as the reasons for the rise in reading frequency. One parent perceived the digital reading experience as more interesting than the traditional experience for her child. The "aesthetic" experience of reading digital texts on iPads is indeed a very personal experience. The parents' attitudes, feelings and beliefs about reading digital texts on iPads were influenced by their prior experiences with traditional texts. This finding is supported by Rosenblatt's (1978) transactional literary theory and reader response theory in that the reader's response is linked to their personal experiences. Several parents reflected on their own early reading experiences and discussed their concerns regarding the balance between old and new technologies. One parent explained that children needed to read and experience traditional books and learn to write with pens and pencils just as they (the parent) had at school. Furthermore, when asked about their favourite digital book, the majority of parents cited Dr Seuss, explaining they had read it as a child. Whilst the majority of the parents in the experimental group believed that iPads were helping their children learn, some parents viewed the device as an entertainment device and restricted their children's use at home. Furthermore, parents also reported that they restricted the use of the iPad at home as a consequence of negative child behaviours. That is, time on the iPad to play games was considered in part a reward for the child's positive behaviour in the home.

Digital and printed texts co-existed as families continued to read the school-provided home readers and personal collections of printed books during the intervention period. Rather than replacing print books with e-books, evidence from parents suggests that many of the children perceived the two types of books differently, particularly with regards to independent and shared reading. Whilst the families read the digital texts for the purpose of shared reading, many of the children preferred to read them independently. Interestingly, this finding was also mirrored in the Vaala and Takeuchi (2012) research findings.

The interactive features in the e-books appeared to undermine the shared reading experience for some families with one parent indicating that she had been made "redundant" because the digital book could read to her son. When asked how she felt about being made "redundant" she replied "Well, I still get questions. The iPad can't answer questions yet so it's not quite that clever".

**Shared Reading Videos**

Six children from the experimental group involved with the e-books were videoed reading e-books with their mothers at the completion of the six-week shared reading intervention. The families read two familiar texts, *Each Peach Pear Plum* (Ahlberg & Ahlberg, 2011) and *Dr Seuss' ABC* (Seuss, 2010) and one unfamiliar text, *Slinky Malinki's Christmas Crackers* (Dodd, 2012). All of the children were observed in a relaxed setting with the child closely seated next to the parent (adult) and positioned to view the iPad screen. A video camera was placed in front of the participants to capture facial expressions and gross-motor movements. A second video camera was placed to the side of the participants to capture iPad screen content and fine-motor movements. These videos were analysed using a criteria sheet called the *Dialogic and Digital Reading Inventory* (see Appendices H and I). This Inventory is an adaptation of the *Dialogic Reading Inventory* (Dixon-Krauss et al., 2010) and the *Typology for Observing Children's Engagement with E-Books* (Roskos et al., 2012).

The main finding from this analysis indicated that many of the participating families were not always exploiting the unique interactive features of the digital texts to support their children's literacy development. For example, two of the e-books included interactive features including tap on pictures to learn new words, tap each word to hear it read aloud, double tap to replay a paragraph, tap the arrow to record your own voice, read aloud to me, use my painting, and background music. Whilst some parents encouraged the children to access this above read

aloud feature, other parents discouraged the use of this feature. The read aloud feature allows the user to hear the printed words pre-recorded within the text. The user may have the option to hear the entire text. Alternatively, individual words can be heard when the user taps the printed word on the screen. One parent reprimanded her child for tapping to hear an unfamiliar word and explained it was cheating, despite her child's repeated and frustrated efforts to sound out words. Only four children accessed the tap word to hear a word feature, with only three parents prompting them to do so. None of the families recorded and listened to their own narration and none of the families tapped a word on the screen to see or hear the definition of an unfamiliar word.

Observations of dialogic reading behaviours were limited and in several cases not present at all. Rather than an interactive shared reading experience, for some families it was a passive experience as they listened to the pre-recorded narration. None of the parents discussed the book parts, author or punctuation to help their children develop their understandings about concepts of print as recommended by Clay (2007). Despite all three e-books containing rhyme, only one parent discussed rhyme with her child. No parent asked the child to recall information from the text and only two parents discussed new or unfamiliar words, although the texts containing vocabulary likely to be unfamiliar to the child. Questioning was limited with half the parents not asking any questions, and half asking open or closed questions. Only two parents elaborated on their children's comments or understandings, or rephrased their children's ideas associated with what their child read.

**Case Study**

The following case study provides insight into the different ways families in the study experienced the e-books in phase two. Rebecca, her younger sister, Alice, and their mother, Judy, were videoed reading three e-books.

Reading E-Book One: During the first reading, Judy held the iPad and read *Slinky Malinki's Christmas Crackers* (Dodd, 2012) to the two children. This was the first time the family had read this unfamiliar text. Judy paused to listen to the children's comments and answer their questions, drawing attention to the illustrations to help her children make sense of the text. She asked open and closed questions and requested predictions about the story. The children were active participants in the reading.

Reading E-Book Two: Rebecca held the iPad as they listened to the *Dr Seuss' ABC* (Seuss

2010) narration and swiped the screen to turn the pages. In contrast to the previous interactive reading, there were no interactions between any family members. Alice sat beside Rebecca and read a print book as Rebecca and her mother passively experienced the e-book.

Reading E-Book Three: During the third reading, Rebecca read *Each Peach Pear Plum* (Ahlberg & Ahlberg, 2011) to her mother and younger sister. She actively engaged her sister by copying the interactive reading behaviours her mother had previously modeled during the reading of *Slinky Malinki's Christmas Crackers*: reading enjoyment (smiling and laughing); making connections between spoken words and pictures in the text; asking questions; clarifying meanings; using story telling voice; promoting understanding of new vocabulary.

The following is an excerpt from the video transcript of Rebecca reading a familiar text to her younger sister and mother.

*Rebecca: Three bears out hunting. I spy baby bunting. Alice, where's baby bunting? Alice: Where go? Rebecca: (laughs) She's still there. Alice: (points randomly at screen).*

*Rebecca: No, that's a baby. That's baby there. Where's baby bunting? She's up there.*

*Alice: yeah, up there (points to screen)...*

*Rebecca: Three bears still hunting. I spy baby bunting. Look Alice, she's awake. Alice: There, the teddy bear.*

*Rebecca: Look down there (points to picture of a lake). It's a lake! Lake. Baby bunting safe and dry. I spy plum pie. Alice, where's plum pie?*

*Alice: (Points to wrong picture)*

*Rebecca: No. It's in the sun (points to correct picture).*

This chapter has explained the effects of reading digital texts on young children's early literacy development and shown that they did not differ significantly from the effects of traditional print reading practices in this study. It has detailed how parents in this study are using different types of e-books with their children. The chapter acknowledges that parents' perceptions of the digital shared reading intervention and learning with iPads was positive at the completion of the intervention. The following chapter will outline the goals and describe

the research design of the third and final phase of the study, and detail the research methods employed to achieve these goals.

# Chapter 8 Phase Three Methods

This chapter details the research design of phase three of the study. This chapter commences with an overview of the third phase: outlining the three main goals, detailing elements of the complex research design, and describing the shared reading intervention that is central to this phase. The chapter continues with an explanation of data collection procedures and concludes with an account of the data analysis procedures employed during phase three.

## Phase Three Overview

The goals of this intense third and final phase were to: (a) implement a digital shared reading intervention; (b) establish a support programme for parents to cultivate joint media engagement, rather than the passive experience of co-viewing, and facilitate two-way communication and knowledge exchange between the participants and the researcher; and (c) evaluate the effects of the intervention on children's literacy development, and families' reading practices and beliefs. In order to provide a detailed account of the effects of the intervention, the study includes a continual pattern of observations of adult and child participants reading together as well as continual assessments of children's literacy development. The ABC, time series, design of this final phase included a Baseline Phase, and Intervention Phase and a Maintenance Phase.

- "A" PHASE = Baseline Phase: Collected data on shared reading without support over a two-week period.
- "B" PHASE = Intervention Phase: A parent two-way knowledge exchange group was implemented and effects were measured and monitored for six weeks.
- "C" PHASE = Maintenance Phase: The two-way knowledge exchange group ceased at the completion of the six-week intervention. Shared reading video data were collected and vocabulary assessments administered two weeks after the completion of the intervention.

Of this group of eight children, six were male with a mean age of 78.5 months and standard deviation of 9.11 months across the sample. Table 8.1 provides further information regarding grade and gender of the children.

Table 8.1

*Grade and Gender of the Eight Participants*

| Grade | Male | Female | Total |
|---|---|---|---|
| Prep | 3 | 1 | 4 |
| One | 2 | 0 | 2 |
| Two | 1 | 1 | 2 |
| Total | 6 | 2 | 8 |

**Phase 3A**

Phase 3A included one period of measurement. Pre intervention literacy assessments and shared reading video data were administered and collected at the beginning of Week 1. Parents were given two e-books to read with their children. Training for parents was not provided, as the aim of this phase was to collect baseline data.

**Phase 3B**

A two-way knowledge exchange intervention was implemented during Phase 3B. The aim of the two-way knowledge exchange group was to optimise the families' involvement in the shared reading experience by providing information about the most effective ways to engage children in reading electronic books and practices that promote literacy development. While it was not promoted as a prescriptive training programme, parents did receive advice from the researcher about dialogic reading. Previous research has suggested that dialogic, or interactive, reading is an effective way for parents to assist their children to develop emergent literacy skills (Gall et al., 2007; Woolley, 2011). Collaborative relationships, and/or partnerships, were central to the establishment of the two-way knowledge exchange group. Rather than providing parent training sessions that sought to impart one way knowledge from the researcher to the parents, the aim of the group was to acknowledge the cultural capital that exists within the school community and build a sense of solidarity, or a sense of

community, through resource sharing. Parents were given an opportunity to share their experiences and to ask questions. They were encouraged to talk about how they managed the e-books and iPads, their opinions about iPads in literacy education, and whether or not the e-books had increased their children's reading engagement.

They were encouraged to share what had and had not worked and what they, and their children, liked and did not like about reading digital and traditional texts. Parents were able to talk about their children's favourite books and discuss how they, or their school, have helped their children develop a love of books and reading. Researcher created Keynote presentations were loaded onto the iPads in weeks three and six, when new e-books were also loaded. The Keynote presentations were titled "Reading an e-book with your child", "Dialogic Reading: Tips for developing early literacy skills", "Shared reading: Prompt, Evaluate, Expand, Repeat", "Prompting with CROWD", and "Developing early literacy skills: Before, during and after the reading". Each presentation covered information discussed during the community focus group sessions. The presentations included videos of the researcher reading dialogically with a child, written and verbal information about dialogic reading, practical information about accessing the special interactive features in e-books and photos and screen captures from e-books.

Phase 3B included multiple periods of measurement and multiple times for parents to meet together with the researcher. Video data were collected at the beginning of weeks three and six and again at the end of week eight/beginning of week nine. All children and parents were videoed reading a digital story and the data were analysed to determine the frequency and quality of the parent-child interactions. DeBruin-Parecki (1999) argued that:

> if the quality of interaction between adult and child promotes literacy development, then it is important to evaluate the behaviours of both participants in order to determine instructional strategies that may assist them both (p.10).

The video data from the intervention phase were useful for determining the Zone of Proximal Development (ZPD) of each participant. The ZPD refers to the distance between what individuals can achieve on their own and what they can potentially achieve with guidance or in collaboration with more knowledgeable others (Vygotsky, 1978). This information collected from the video data enabled the researcher to provide feedback to participants and

scaffold the support within the ZPD of the individual and group and thus provide timely and effective information and guidance that catered for the individual needs of each case. Families were provided with a further three digital books in week three and a further three books in week six.

**Phase 3C**

Week nine marked the beginning of the maintenance phase (phase 3C). One new book was given to the participants at the beginning of the maintenance phase and the two-way knowledge exchange group ceased for the remaining two weeks. Phase 3C included one period of measurement during the final week. Video data were collected at the conclusion of the tenth week and children's expressive and receptive vocabulary development was assessed for the final time.

**Phase Three ABC Data Collection**

Continuous data collection throughout the three stages of the phase three intervention (refer to Table 8.2 for details) enabled the researcher to track the child participants' progress and provide timely feedback to the adult participants. Pre-test and post-test measures for phase three included PPVT-4A and 4B, EVT-2A and 2B, HPNT, MPVT -2, and CAP. Parents were videoed sharing books with their children during the five data collection points and parent interviews were conducted at the completion of the six-week intervention during week eight. The qualitative data from the videoed shared reading experiences and the semi-structured interviews provided information about participants' experiences, perceptions, and reading behaviours.

Table 8.2

*Outline of Tests and When Administered*

| Test | A Phase Baseline | B Phase Intervention and Monitoring | | | C Phase Maintenance |
|---|---|---|---|---|---|
| | Time 1 | Time 2 | Time 3 | Time 4 | Time 5 |
| PPVT-4A | ✓ | | | | ✓ |
| PPVT-4B | | ✓ | | ✓ | |
| EVT-2A | ✓ | | ✓ | | ✓ |
| EVT-2B | | ✓ | | ✓ | |
| CAP | ✓ | | | ✓ | |
| MPVT-2 | ✓ | | | ✓ | ✓ |
| YARC | ✓ | | | ✓ | |
| SS Interview | | | | ✓ | |
| RBS | ✓ | ✓ | ✓ | ✓ | ✓ |
| DDRI Video | ✓ | ✓ | ✓ | ✓ | ✓ |

For the eight children participating in this aspect of the research eight e-books were provided to each child and their families. When these different e-books were given to the participating children is outlined in Table 8.3.

Table 8.3

*E-Books Allocated by Phase Across the Home Reading Programme*

| Phase | | Week | E-Book |
|---|---|---|---|
| A Phase | Baseline | 1 | *Kit Kit Koala*<br>*Rumble in the Jungle* |
| | | 2 | |
| B Phase | Intervention and Monitoring | 3 | *Hairy Maclary Show Business*<br>*Toy Story Showtime*<br>*Fantastic Flying Books* |
| | | 4 | |
| | | 5 | |
| | | 6 | *Shark Goes to the Doctor*<br>*LMNO Peas*<br>*There's a Wocket in my Pocket* |
| | | 7 | |
| | | 8 | |
| C Phase | Maintenance | 9 | *Quaky Cat* |
| | | 10 | |
| | | 11 | |

**Phase Three ABC Data Analyses**

The data analysis methods for phase three followed the same procedures as for phase two (see page 74 for details). The researcher triangulated the qualitative and quantitative data from multiple sources (Creswell, 2009; Jick, 1979), including literacy assessments, video data, parents' interviews, and reading behavior surveys. This triangulated data will be presented as case studies for each child in Chapter Nine.

### Literacy Assessments and Reading Behaviour Survey Analyses

Analyses of the literacy assessments results for phase three, times one to five, were performed using IBM's Statistical Product and Service Solutions predictive analytical software (SPSS) and descriptive statistics were computed for age, gender and grade. Mean scores were computed for the pre-test (baseline at Time 1), mid-test (monitoring at Time 2, 3 and 4) and post-test (maintenance at Time 5) literacy measures.

### Video Data Analysis

Parent-child dyads were videoed reading a digital storybook together for a maximum of five sessions (Time 1 to Time 5). Each parent-child dyad read one familiar and one unfamiliar text during each session (Time 2, Time 3, Time 4, and Time 5), except for the first session (Time 1) when only one unfamiliar digital text was read. Videoed sessions ($n$ = 34) were analysed in QSR International's NVivo10 software. A selection of videos from T1, T4 and T5 were scored on the Dialogic and Digital Reading Inventory (DDRI). The researcher observed each parent-child storybook-reading episode and tallied how many times the specific literacy behaviours listed on the DDRI occurred. Dialogic reading interactions were analysed and tallied as parent-initiated and child-initiated.

### Interview Data Analysis

Phase three interview data were analysed using QSR International's NVivo10 software. NVivo10 provided a 'looking glass' through which the data could be examined and understood. Beekhuyzen, Nielsen, and von Hellens (2010) adopted the metaphor of the *looking glass* to describe the exploratory process of examining the data.

When using NVivo, the researcher imported the interview transcripts into the NVivo programme and the data were systematically broken into thematic parts. The semi-structured interview schedule provided a platform for creating codes, or categories, in which participant responses could be classified thematically. Furthermore, as new themes emerged through analysis of the transcripts, new nodes were also created, generating new insights into the data. The data were then reconstructed to provide a meaningful narrative regarding the findings of this detailed and systematic process. The reconstructed data will be presented in the following chapter, Chapter 9, in the case studies section.

# Chapter 9 Phase Three Results

This chapter will begin with a broad overview of the literacy assessment results obtained during phase three of the study. A comprehensive analysis of the literacy assessment results will then be presented. The chapter will close with case studies for each of the eight participants. Data from the parent interviews, videoed shared reading sessions and children's literacy assessments were triangulated and will be presented in a selection of the case studies.

**Literacy Assessments Summary**

The research design for phase three utilised eight participants, six of whom were male. At the time of the intervention the eight participants ranged from 68 months to 92 months (Mean = 79 months, Standard Deviation = 9 months). The aim of this phase was to examine the effects of a shared reading intervention with two-way knowledge exchange sessions for the parent participants.

The data analysis was by mean group comparison scores using independent paired *t*-test statistics of the children' ten literacy tests results. The critical statistical comparison points were between the children's pre intervention phase data and same children's process on the data collected at the completion of the intervention, the post intervention data. The phase three quantitative findings are similar to those identified in the phase two data set. This second cohort of participating children showed improvement at the end of the digital book reading intervention on both expressive and receptive vocabulary measures, the concept about print test, and on four of the five subtests of the *York Assessment of Reading Test.* The full details of these results are reported in the following table.

Table 9.1

*Comparison of Pre and Post Intervention Means on the Language and Literacy Measures for the Digital Reading Cohort*

| Name of Test | Pre test | | Post test | | *t* | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | (*df* =7) | Sig |
| *Peabody Picture Vocabulary Test* (Receptive language) Raw Scores | 110.86 | 17.62 | 130.3 | 11.01 | 3.87 | .008 |
| *McNab Picture Vocabulary Test* (Receptive Language) Raw Scores | 59.43 | 5.76 | 72.57 | 4.35 | 6.59 | .001** |
| *Expressive Vocabulary Test* Raw Scores | 85.29 | 9.82 | 103.0 | 8.46 | 4.27 | .005** |
| *Hundred Picture Naming Test* (Expressive language) Raw Scores | 88.50 | 4.72 | 93.63 | 3.11 | 5.3 | .001** |
| *Concept About Print* Test Scores | 15.13 | 5.59 | 18.63 | 3.70 | 3.22 | .01* |
| *York Assessment of Reading* Letter Sound Knowledge (*n* = 8) | 20.13 | 8.93 | 25.38 | 6.63 | 3.53 | .01* |
| *York Assessment of Reading* Early Word Recognition (*n*= 7) | 10.57 | 12.82 | 13.43 | 12.85 | 3.33 | .016* |
| *York Assessment of Reading* Sound Isolation (*n* = 5) | 5.00 | 2.64 | 11.00 | 1.00 | 6.32 | .003** |
| *York Assessment of Reading* Sound Deletion (*n* = 8) | 6.88 | 2.80 | 8.50 | 2.67 | 2.15 | .068 |
| *York Assessment of Reading* Phoneme Awareness Composite (*n* = 5) | 10.60 | 4.66 | 17.80 | 1.92 | 3.53 | .024* |

*$p$<.05, **$P$<.01, ***$p$<.001

## Case Studies

The following section provides qualitative and quantitative information about each of the eight participants and their experiences of the digital shared reading intervention. Individual reports are provided for the EVT, PPVT and YARC. Information from the videoed shared reading sessions, questionnaires and interviews has been integrated into each case study. Names have been replaced by pseudonyms to protect the identity of the individuals.

### Case One: Alex

Alex is a male child enrolled in Grade 1 who was 6 years and 11 months of age at the time of initial testing (Time 1) for phase three. Prior to the digital shared reading intervention, Alex's mother, Sonia, and father, Brett, usually read printed texts to him twice a week. Whilst they never read digital books with him, Alex read digital texts on his own twice a week and printed texts three times a week. The family owned an iPad mini and an iPod. On a typical day, Alex would spend between 15 and 30 minutes reading or being read to. At the commencement of the digital shared reading intervention, Sonia said that reading printed and digital books would help her child's learning. Furthermore, Sonia believed that using an iPad at school and at home would have a positive effect on her child's learning. Sonia's highest level of education was high school.

Alex's mother and father participated in the interviews at T5. During the interview, Sonia spoke about her son's increased desire to read by himself, how he wants to "grab the iPad and sit down by himself, rather than wanting to be read to all the time" (excerpt from Sonia and Brett's interview transcript). She attributed his preference for reading books on the iPad rather than print books to his engagement with the interactive features of the e-books and noted that her son "absolutely hates" reading books without the interactive features. Alex was not interested in the e-book unless it could read to him, or he could choose to have particular unknown words read to him when he tapped word on the screen. Alex did not always listen to the audio in the books; rather, he would try to read it and access the read aloud function only as required. As Sonia explains:

> *So, I've noticed that now too, that when he's reading, if he's reading to me and gets to a word that he doesn't know, he does the whole sort of try and*

> *work it out and then he says mum I don't know it and then he will touch it so that it'll say it to him*.

Sonia also noted that reading digital texts is helping Alex to read independently:

> *If Alex gets stuck on too many words he can have the book read to him first and then I'll hear him go back through and read it to himself rather than, yeah, just picking up a book and going I can't read it, putting it down. So yeah, more independent, definitely.*

Sonia also explained that she enjoyed the interactive features as well; how the characters move, and how the interactivity draws her son in and has him "more interested" in the book. Sonia stated that Alex preferred digital books over print books, and she did not think that this had resulted in longer reading episodes. Conversely, Sonia noted that Alex moved through the digital book more quickly than with a print book. When he did read a book for longer, it was because he was engaging with the interactive features. Sonia understood the value of dialogic reading and discussing the texts with her children. Whilst she admitted that she does not normally talk about a book before they read it, both she and Alex talk about the book as they read it. They discussed "things that happen in the book, things that relate to us, sort of things that are in everyday life for us…and then sometimes when we finish the book, we go back to the pages we liked and redo the activities and those sorts of things". Alex normally read aloud to his mother; however, occasionally Sonia read most of the page and Alex read the final word of each sentence.

The reading behaviours Sonia described in the interview were evident in the shared reading videos. Sonia and Alex conversed freely while they shared the digital books; asking questions, discussing new vocabulary such as furnace and column, relating story content to Alex's personal experiences, elaborating understandings, pointing to the pictures to help Alex understand the story. It was evident from the first videoed shared reading episode that Sonia was actively helping her son learn to read through shared reading. Mother and son sat comfortably together and snuggled on the seat. During the T1 video, Alex maintained control of the iPad and proceeded to read *Rumble in the Jungle* from beginning to end in a quiet, relatively monotone voice, with frequent and gentle encouragement from his mother. Sonia directed Alex's attention to the initial sounds in words (onset) that he was unable to decode independently. She modelled the pronunciation of new vocabulary, such as boa constrictor,

terribly, prowl, and fleas and provided an explanation of each new word's meaning. Sonia asked open and closed questions to check for understanding. She repeatedly pointed to the pictures on the screen to help her son make sense of the text. After the reading, Sonia directed Alex's attention to the animations/hotspots in the text and together they enjoyed exploring the interactive features of the book, just as she had described in the interview.

Sonia read *Quaky Cat* to Alex as he held the iPad at T4, reminding him to follow along as she read the book. Unlike the T1 video, they interacted with the hotspots and animations during the reading, rather than at the completion. Alex remained silent except for giving physical gestures, in response to his mother's questions. At the completion of the story Sonia asked,

> *So, do you know what happened in that book? Let's go back to the beginning (scrolls back to the first page). This is where mum and dad went and visited when we went on our on cruise…See here, Christchurch (points to the word on the screen and taps it to hear the word read aloud). That's where mum and dad went when we went on our cruise. That's where the big earthquake was. Have a look.*

Sonia proceeded to describe the noise and devastation caused by the earthquake. She explained that the cat in the picture is running away because he is scared. Sonia scrolled through the pages and pointed to a picture of the cat up a tree, explaining that cats run up trees when they are frightened. Sonia asked Alex what he does when he is frightened and they discussed this briefly. Together they scrolled backwards and forwards through the book, making sense of the story by looking at the pictures and discussing what they saw.

In the T5 video, Alex read *Wocket in my Pocket* while taking control of the iPad. His mother praised his efforts, or offered encouragement or comments on every page. Alex spontaneously identified rhyming words, explaining to his mother that only the first sound changed. Sonia made a connection to Alex's prior knowledge, asking if he thought the rhyme was the same sound as in their Bella (a familiar name to Alex). As for the T4 video, Alex attended to the hot spots and animations during the initial reading.

When asked if she had any difficulties reading the digital books with her son, Sonia identified the audio features that could not be turned off as annoying and explained, "…as you were trying to read the book, the book was cutting in and interrupting you and it was like you want

the book to stop so you can talk about it and talk about what's on the page…". Sonia said that the interactive features in one of the books was annoying because she did not think it added to the learning experience and Alex only wanted to play. She felt very differently about the interactive features in other books, citing the *Fantastic Flying Books of Mr. Morris Lessmore* (Joyce, 2012) and *There's a Wocket in My Pocket* (Seuss, 2011) as her two favourite e-books during the intervention.

Sonia attributed Alex's desire to read with more expression to hearing her pre-recorded voice read the story on the iPad. Alex thought it was hilarious and would delete his mother's voice and try to make his narration sound better than hers.

With regard to the researcher created Keynote presentations on the iPad, Sonia acknowledged that she had accessed them at home and found them useful, although she stated that she was already doing the suggestions in the presentation. When asked if there were any ways the presentations could be improved, Sonia replied,

> *No, I liked them. I thought they were good and if I wasn't already doing the things that were in there, yeah, it would have been - I liked how it was you (researcher). Like it was more personal, rather than just being something you'd downloaded from somewhere to say this is how you should read. It was, yeah, I like that.*

Sonia reported the two-way knowledge exchange sessions helpful: "Yeah, especially if we were stuck on something. It was good to be able to have time where we could talk to you about it and say, what can we do here and this book's not working properly, what am I doing wrong?" The sessions helped Sonia be more aware of the importance of talking about the books she reads with her children. Sonia indicated that she would "definitely" be interested in attending similar sessions if they were offered in the future, as she wanted to learn more. Sonia expressed a desire to be involved in her children's learning and wanted to understand what her children were learning at school. She reported that there was a need for an intervention in the early years, such as the one she had experienced in this study, noting, "I do because most kids at schools these days are using iPads and, yeah, if you can introduce it a bit younger at home they're (children) prepared when they come to school".

The benefits of the intervention were not limited to Alex, with his mother noting that all three of her children were reading more with the digital books on the iPad than they were previously reading with printed texts.

> *The only negative part was I didn't have three iPads because they all wanted to do the same thing at the same time…They all loved it. Yeah, especially interacting with the books rather than just sitting and reading, because David, our oldest son, he's nine, and he'll sometimes sit down and they would actually take turns sometimes. So the first one would do the activity and then they'd go back to the beginning of that page and hand it over and, yeah, make it a bit of a competition between themselves I think.*

Brett (Alex's father) remained silent throughout the interview; however, when asked if he would like to comment on anything he replied, "I didn't have a chance to have a go. They've (children) always got it" (laughing).

Alex's literacy assessment results demonstrate that the digital shared reading intervention had a positive effect on his literacy development. Alex achieved criteria on YARC sound isolation at T1. He attained the following scores (Table 9.2) on YARC Early Reading at T1 and T4:

Table 9.2.

*Alex's YARC Early Reading*

| | Time | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 74 | 93 | 32 | 6:04 |
| | Time 4 | 100 | 124 | 95 | >8:02 |
| Early Word Recognition | Time 1 | 90 | 105 | 63 | 7:02 |
| | Time 4 | 100 | 109 | 73 | >7:07 |
| Sound Deletion | Time 1 | 61 | 91 | 27 | 6:03 |
| | Time 4 | 79 | 108 | 70 | 7:10 |
| Phoneme Awareness Composite | Time 1 | 67 | 100 | 50 | 6:11 |
| | Time 4 | 80 | 113 | 81 | 8:01 |

As can be seen in Tables 9.3 and 9.4, Alex's vocabulary development improved during the ten-week intervention. He obtained an EVT-2 standard score of 106 (66$^{th}$ percentile) at T1 and at T5 achieved a standard score of 118 (88$^{th}$ percentile), an increase of 22 percentiles. According to the EVT classification system, Alex's expressive vocabulary functioning was in the average range at T1 and the moderately high range at T5. There was an improvement in EVT scaled scores from the T1 EVT's Growth Scale Value score of 158 to the T5 EVT Growth Scale Value score of 167.

Table 9.3.

Alex's EVT T1 – T5 Summary (Age Norms)

| | Raw Score | Standard Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 94 | 106 | 99-113 | 158 | 66 | 58 | 6 | 7.7 | Average |
| T2 | 93 | 104 | 97-111 | 157 | 61 | 56 | 6 | 7:4 | Average |
| T3 | 102 | 112 | 104-119 | 163 | 79 | 67 | 7 | 8:5 | Average |
| T4 | 98 | 107 | 99-114 | 160 | 68 | 60 | 6 | 7.10 | Average |
| T5 | 110 | 118 | 110-125 | 167 | 88 | 75 | 7 | 9:5 | Mod. High |

Alex's receptive vocabulary functioning remained within the average range from T1 to T5, however, his standard score improved from 96 (39th percentile) at T1 to 113 (81st percentile) at T5, an improvement of 42 percentiles. According to the PPVT Growth Scale Value (GSV) scores there was a difference between the T1 score of 148 and T5 score of 165. There was also an improvement between Alex's EVT Growth Scale Value standard score and PPVT score from T1 to T5.

Table 9.4

*Alex's PPVT T1-T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 110 | 96 | 89-103 | 148 | 39 | 44 | 4 | 6:8 | Average |
| T2 | 122 | 104 | 97-111 | 155 | 61 | 56 | 6 | 7:3 | Average |
| T3 | 115 | 98 | 91-105 | 152 | 45 | 47 | 5 | 6:11 | Average |
| T4 | 139 | 114 | 106-121 | 166 | 82 | 70 | 7 | 8:7 | Average |
| T5 | 134 | 113 | 105-120 | 165 | 81 | 68 | 7 | 8:5 | Average |

**Case Two: Caitlin**

Caitlin is a female child enrolled in Grade 2 who was 7 years and 5 months of age at the time of initial testing (Time 1) for phase three. Caitlin's mother's highest level of completed education was Year 11 and at the time of the intervention, she was studying part-time to become a teacher aide. Caitlin's mother, Tina, is an avid reader and has been reading to Caitlin since she was in the womb. Tina cited learning, being together, sharing and love of reading as her reasons for reading to her daughter. Prior to the intervention, Tina spent 30 minutes, six times a week, reading a printed text to her. Caitlin spent approximately 2 hours reading printed texts seven times a week. Caitlin did not read digital texts prior to the intervention, as the family did not own any digital book reading devices. Tina believed that reading paper books and using an iPad at home and school would have a positive effect on her child's learning.

Like her mother, Caitlin was also an avid reader, with Tina noting that her daughter read all the time. At the conclusion of the intervention Tina commented that Caitlin was reading more, and attributed her daughter's increase in reading to using the iPad and loving it. Tina particularly enjoyed learning to use the iPad, reading together, and the interactions between herself and her daughter. When asked to describe what usually happens when they share a book on the iPad together, Tina replied:

> *If she wants to know what a word means, we normally stop and talk about the word…Other than that she'll just read and we might discuss the book afterwards. Did you like the book? What did you feel, or at the start of the book you might say, well, what do you think is going to happen at the start…and what's the book about.*

Tina and Caitlin usually alternate pages when sharing a book together. To the best of Tina's knowledge, Caitlin never used the dictionary app on the iPad or the dictionary function in the digital books. Tina found the interactive features in the books distracting and acknowledged that it (the digital book) was new to her as she had not experienced this type of reading before. Despite finding the interactive features in the books distracting, Tina selected the interactive book, *Fantastic Flying Books of Mr. Morris Lessmore* as her and her daughter' favourite book. Tina also commented that her daughter liked the 'Shark' book (Ruckus, 2013) and had answered a lot of the questions in the book and made her own pictures. Tina

believed her daughter liked reading the digital texts on the iPad because she liked interacting with the story. Conversely, Tina believed her daughter found the non-interactive books boring and babyish.

Tina and Caitlin selected the read aloud function and proceeded to engage in a choral reading of *Rumble in the Jungle* for the video at T1. At the completion of the story, Tina conversed freely about the animals featured in the games as Caitlin engaged with the puzzles at the end of the book; however, Caitlin rarely answered her mother's questions and this pattern was evident in all three videos. At T4, Caitlin read *Quaky Cat* fluently. Tina cued her daughter into the story by asking what the cat on the title page was doing (crying). Four minutes into the reading, Tina asked Caitlin if she would like her to read. When Caitlin did not respond, Tina joined in and they read the story together, in much the same way as they had at T1. Caitlin only accessed the tap to hear a word feature once to listen to an unfamiliar word (cathedral), although the complex vocabulary contained in the text. When Caitlin read her favourite book, *Fantastic Flying Books of Mr. Morris Lessmore* at T5 she again maintained control of the iPad. She selected the read to me option and proceeded to read with the audio. The reading alternated between Caitlin reading with the audio and Caitlin and her mother reading together. This was a highly interactive experience for both participants with Caitlin and Tina attending to the hotspots and animations as they read the story. Caitlin stopped and played "Pop goes the weasel" following the instructions on the digital piano in the book. Whilst dialogic reading behaviours were present during the three readings, they were often limited to one-way exchanges.

Tina reported that she found the Keynote presentations very helpful and acknowledged that she needed a lot of help with learning how to use the iPad, as this was her first experience using the device. Tina also acknowledged that the two-way knowledge exchange sessions were informative and other parents may be interested if they had the time to attend, however, she was concerned that all the iPads may not be returned if the intervention was offered in the future. Tina acknowledged the flow-on effect the intervention had had on her elder daughter's reading habits, noting that she had also started reading more during the intervention.

Prior to the commencement of the phase three intervention, Tina was apprehensive about her daughter reading books on an iPad; however, at the conclusion of the programme she stated, "Well, I'm going to buy one…I'm hooked. Yes, it's just the benefits, what you can use. I'm

going to buy one. Yeah, it's opened up a new little world for me. I think it is an excellent study…" (Tina's interview transcript).

Caitlin achieved criteria on YARC early word recognition and sound isolation at T1. She attained the following scores on YARC Early Reading at T1 and T4.

Table 9.5.

*Caitlin's YARC Early Reading*

| | Time | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 77 | 94 | 34 | 6:10 |
| | Time 4 | 82 | 100 | 50 | 7:09 |
| Early Word Recognition | Time 1 | 100 | 115 | 84 | >8:09 |
| | Time 4 | 100 | 113 | 81 | >8:00 |
| Sound Deletion | Time 1 | 79 | 106 | 66 | 7:10 |
| | Time 4 | 100 | 126 | 96 | 8:00 |
| Phoneme Awareness Composite | Time 1 | 80 | 110 | 77 | >8:01 |
| | Time 4 | 100 | 129 | 97 | >8:01 |

Caitlin made steady progress with her expressive vocabulary development during the intervention (Table 9.6). She achieved an EVT-2 standard score of 92 (50$^{th}$ percentile) at T1 and a standard score of 118 (88$^{th}$ percentile) at T5, representing an increase of 38 percentiles. According to the EVT classification system, Caitlin's expressive vocabulary functioning was in the average range at T1 and the moderately high range at T5.

Table 9.6.

Caitlin's EVT T1 – T5 Summary (Age Norms)

| | Raw Score | Standard Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 92 | 100 | 93-107 | 157 | 50 | 50 | 5 | 7:5 | Average |
| T2 | 85 | 91 | 84-99 | 152 | 27 | 37 | 4 | 6:8 | Average |
| T3 | 88 | 95 | 88-102 | 155 | 37 | 43 | 4 | 7:0 | Average |
| T4 | 105 | 108 | 100-115 | 164 | 70 | 61 | 6 | 8:8 | Average |
| T5 | 113 | 118 | 110-125 | 169 | 88 | 75 | 7 | 9:9 | Mod. High |

This upward trend with expressive receptive vocabulary, however, was not evident with regards to her receptive vocabulary development (Table 9.7), indicating that Caitlin may be better at demonstrating vocabulary knowledge in an open, expressive format than in a receptive, focused format. A standard score of 106 (66$^{th}$ percentile) was achieved on the PPV-4 at T1 and a lower standard score of 100 (50$^{th}$ percentile) was achieved at T5. Interestingly, Caitlin's T4 standard score was 109 (73 percentile) at T4, but dipped during the maintenance phase when the parent sessions were ceased. According to the PPVT Growth Scale Value (GSV) scores there was little difference between the T1 score of 161 and the T5 score of 158. Catlin's PPVT scores from T1-T5, indicate that Caitlin's receptive vocabulary functioning is an insecure skill at this point in time. Caitlin's receptive vocabulary functioning remained in the average range from T1 to T5.

Table 9.7.

Caitlin's PPVT T1 – T5 Summary (Age Norms)

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 128 | 106 | 99-113 | 161 | 66 | 58 | 6 | 8:0 | Average |
| T2 | 124 | 98 | 91-105 | 156 | 45 | 47 | 5 | 7:5 | Average |
| T3 | 119 | 97 | 90-104 | 155 | 42 | 46 | 5 | 7:3 | Average |
| T4 | 137 | 109 | 102 -116 | 165 | 73 | 63 | 6 | 8:5 | Average |
| T5 | 124 | 100 | 93-107 | 158 | 50 | 50 | 5 | 7:8 | Average |

**Case Three: Chris**

Chris is a male child enrolled in Prep who was 5 years and 9 months of age at the time of initial testing (Time 1) for phase three. Chris is the oldest child of Zoe and Grant. Zoe's highest level of education was college. Prior to the digital shared reading intervention Chris's mother and father usually read 7-10 print books to him a week, for 30 minutes a day. Chris usually only read a print book to himself twice a week. The family owned an iPad, iPod and iPhone. Chris used an iPad at home to play games. He never read digital texts or had them read to him. Prior to the intervention, Zoe believed that using an iPad at home and at school would have a positive effect on her children's learning. She also believed that reading both digital and print books would help her children learn. Zoe enjoyed reading and wanted her children to 'love' reading. She started reading to Chris when he was a newborn, as she believed it was a "good way to help the kids understand the world around them" (survey answer). Zoe admitted she had mixed feelings about iPads in education during the post intervention interview. She believed that technology use should be limited for children as it had the potential to compromise relationships and children's ability to communicate, spell, and write.

At the completion of the intervention, Zoe reported that Chris was having print books read with him 8-9 times a week and digital books read with him 6-8 times a week. Chris was reading print books to himself 7 times a week and digital books 8 times a week. Zoe

commented that Chris preferred to read digital books by himself, noting that he often asked to be read to from a printed book but only sometimes asked to be read to from a digital book. Comparing the frequency of reading as reported prior to the intervention (a total of 9-12 book readings a week) with the frequency of reading as reported after the intervention (a total of 29-32 times a week) it would seem that Chris's exposure to books increased considerably during the intervention.

Zoe did not enjoy reading the books on the iPad with Chris. Whilst laughing and admitting it was probably a bit harsh, Zoe stated that she hated the iPad with books. She explained, "I'm a book person. I prefer books and I have sort of fobbed that more off to my husband" (laughs). As a result, her husband was reading to their son more often. Having the iPad with books at home had also resulted in her three-year-old daughter reading more. Zoe reported in the interview that she sometimes had not read to her son as often as she had prior to the intervention, explaining that her son "just sits there and listens to the iPad". Zoe believed the interactive features in the fiction digital books were distracting and impacted on comprehension. With regards to non-fiction texts, however, Zoe believed the interactive books were beneficial for children's learning. Despite her dislike of interactive books, Zoe identified the *Fantastic Flying Books of Mr. Morris Lessmore* as her and her son's favourite digital book stating it was "fantastic" because "it's just so different, and it makes you think, (pause) about everything, about life".

Zoe described the strategies she usually uses when sharing digital books with her children: Mother holds the iPad with a child either side taking turns to engage with the interactive features; look at the picture and title and see if there is an obvious connection, discuss the author and the illustrator, and ask a question or two at the completion of the book to make sure they are comprehending it. Sometimes Zoe asked literal or inferential questions, a strategy she never used before the intervention as she thought reading was the main purpose of sharing a book with a child.

Zoe said that the two-way knowledge exchange sessions were beneficial, explaining that she never knew it was important to have a conversation about the book. She also appreciated being able to talk with other parents who were having similar experiences with the digital books and iPads. Zoe was supportive of a two-way knowledge exchange programme being offered in the future and believed that people would participate. Because each digital book is

different, Zoe believed that information about how to access each book would be useful in future sessions. Families need information and encouragement for as Zoe explained, "yes, they (school) send a home reader (levelled text) home, but why? Like, what's the point? Should I be talking more about what we are reading in the book? You know, just some, I don't know, just some tips and tricks and suggestions on how and what to do best".

With regards to the literacy assessments, Chris attained the following scores on YARC Early Reading at T1 and T4:

Table 9.8.

*Chris's YARC Early Reading*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 47 | 77 | 6 | <5:01 |
| | Time 4 | 67 | 99 | 47 | 5:07 |
| Early Word Recognition | Time 1 | 17 | 83 | 13 | 5:02 |
| | Time 4 | 37 | 95 | 37 | 5:07 |
| Sound Isolation | Time 1 | 39 | 77 | 6 | <5:00 |
| | Time 4 | 74 | 104 | 61 | 6:05 |
| Sound Deletion | Time 1 | 26 | 72 | 3 | <5:01 |
| | Time 4 | 49 | 93 | 32 | 5:06 |
| Phoneme Awareness Composite | Time 1 | 34 | 75 | 5 | <5:00 |
| | Time 4 | 56 | 99 | 47 | 5:10 |

On the PPVT-4, Chris achieved standard scores of 91 ($27^{th}$ percentile) at T1and 107 ($68^{th}$ percentile) at T5. Unfortunately he was very unwell for all T5 testing and his family had experienced a stressful week in their personal lives. It is important, therefore, to note that his T4 score was much higher than his T5 score (Table 9.9) and the results may have been more

positive had the circumstances been more favourable. He achieved a Growth Scale Value score of 129 at T1, 151 at T4 and 146 at T5, an improvement of 22 points from T1-T4 and 17 points from T1-T5. According to the PPVT-4 GSV index there was an improvement between the scores and T1 and T4, as well as between the scores at T1 and T4.

Table 9.9.

*Chris's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 82 | 91 | 84-98 | 129 | 27 | 37 | 4 | 5:1 | Average |
| T2 | 119 | 114 | 107-121 | 153 | 82 | 70 | 7 | 7.0 | Average |
| T3 | 102 | 104 | 97-111 | 143 | 61 | 56 | 6 | 6:3 | Average |
| T4 | 116 | 112 | 105-119 | 151 | 79 | 67 | 7 | 6:9 | Average |
| T5 | 106 | 107 | 110-114 | 146 | 68 | 60 | 6 | 6:5 | Average |

On the EVT-2, Chris achieved a standard score of 114 (82$^{nd}$ percentile) at T1, 119 (90$^{th}$ percentile) at T4 and 113 (81$^{st}$ percentile) at T5. According to the EVT Growth Scale Value (GSV) scores there was little difference between the T1 and T4 Growth Scale Value scores nor the T1 and T5 scores (Table 9.10). The decrease in scores from T4 to T5 may be attributed to the decline in Chris's physical and emotional health between T4 and T5. As previously discussed, his mother reported, at T5 testing, that Chris was unwell and the family had been experiencing a very busy and stressful time.

Table 9.10.

*Chris's EVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 86 | 114 | 107-120 | 154 | 82 | 70 | 7 | 6:10 | Average |
| T2 | 83 | 107 | 110-114 | 151 | 68 | 60 | 6 | 6:6 | Average |
| T3 | 89 | 113 | 106-119 | 155 | 81 | 68 | 7 | 7:1 | Average |
| T4 | 97 | 119 | 112-125 | 159 | 90 | 77 | 8 | 7.9 | Mod. High |
| T5 | 89 | 113 | 106-119 | 155 | 81 | 68 | 7 | 7:1 | Average |

Chris's EVT standard score and PPVT score at T1, indicating that he performed better on expressive vocabulary tasks than on receptive vocabulary tasks. There was also an improvement between Chris's EVT standard score and PPVT score at T5. His results indicate that he performed better on expressive vocabulary tasks than on receptive vocabulary tasks.

**Case Four: Katie**

Katie is a female child enrolled in Prep who was 6 years and 0 months of age at the time of initial testing (Time 1) for phase three. She is the youngest of three children in her family. Katie's mother's highest level of education was college/vocational school. Prior to the intervention, Katie's parents, Sarah and Ben, usually read print books with her for five minutes per day five times per week. Katie usually read print books independently for fifteen

minutes per day, six times per week. Katie was not reading digital books prior to the intervention. During the intervention the shared and independent reading times reversed with Sarah reading with Katie for 15 minutes per day and Katie reading independently for 5 minutes per day (as reported in her questionnaire). This finding is inconsistent with the post intervention interview data, where Sarah spoke at length about her daughter's increased independent reading with digital books. Sarah estimated the family owned between 41 and 50 children's books and less than ten adult's books. They did not own an iPad or tablet device. During the intervention Katie continued reading print texts as well as the new digital texts.

Sarah appreciated the features in the digital books that assisted her daughter to read more complex texts than she would otherwise have been able read on her own. Sarah found the interactive features afforded by the digital books and iPads particularly useful when she was busy with household chores and unable to read with her daughter. Similarly, Sarah believed her daughter liked the digital books because they could read to her. Whilst Sarah's favourite digital book was *Hairy Maclary Show Business,* she was unable to articulate why it was her favourite. Sarah believed Katie's favourite book was *Shark Goes to the Doctor* and attributed this to her experiences with fishing: "…'cause it was real. Well they go fishing… We're always talking about sharks. But, um, I think it was because it was real and telling you real stuff. It's not just a story". Sarah indicated that she read digital books with her daughter in much the same way as she read print books. Apart from answering Katie's questions, Sarah did not usually employ dialogic reading strategies when sharing books with her. Sarah usually read the story and Katie asked questions or tried to read simple words in the text. This was consistent with the findings from the T1, T4 and T5 digital shared reading videos where minimal verbal interactions were evident. They listened to the audio narration for *Rumble in the Jungle* at T1 and *Shark Goes to the Doctor* at T5. Both mother and daughter listened intently and quietly during T1. Katie read along with the narrator at T5 while her mother held the iPad. Katie did not understand how the game worked in *Shark Goes to the Doctor* and Sarah did not help her make sense of it. Sarah read *Quaky Cat* at T4 while taking control of the iPad. Sarah attempted to read a few lines of text with her mother before giving up. There were no other verbal interactions between mother and daughter following this attempt.

Sarah admitted that she viewed the digital shared reading Keynote presentations briefly and only found them "a little bit" helpful. The two-way knowledge exchange sessions were viewed more favourably with Sarah explaining that she had learnt to use the iPad and digital

books before her daughter got them. This meant that she could help her daughter rather than defaulting to Katie's older brother for assistance. Sarah thought that the two-way knowledge exchange session would be helpful for other parents. She also thought that only a few would attend as it would be dependent on people's time commitments. She suggested that information about how the school teaches sounds (phonological awareness) would be helpful so parents could use the same strategies at home.

Sarah viewed iPads in education positively and believed both paper and digital books could help her children learn. With regard to Katie's experience with reading digital books, Sarah believed they were helping her learn to read "'cause in the end she can read back to you, whether she's just memorised it or not, I don't know but she did it in the video too". She discussed how all her three children had benefitted from having the iPad and digital books in their home. When asked if the other children got to use the iPad, Sarah replied:

> *If they were lucky* (laughs). *She'd* (Lily*) make them sit there and read it with her…Yeah. They had to read them a few times then she showed them. And then she showed that they read to her as well* (laughs). *Yeah, James* (Katie's brother), *read me this. Yeah* (he was happy to read it) *'cause he got to play with it.*

With regards to the literacy assessments, Katie did not meet criteria on any of the T1 assessments. She made improvements on early word recognition and sound isolation on the YARC. Katie's expressive and receptive vocabulary improved from T1 to T5. Katie attained the following scores on the YARC Early Reading at T1 and T4 (Table 9.11):

Table 9.11.

*Katie's YARC Early Reading*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 37 | <70 | 2 | <5:01 |
| | Time 4 | 44 | <70 | 2 | <5:00 |
| Early Word Recognition | Time 1 | 0 | <70 | 2 | <5:01 |
| | Time 4 | 29 | 82 | 12 | 5:05 |
| Sound Isolation | Time 1 | 50 | 81 | 10 | 5:01 |
| | Time 4 | 100 | 123 | 94 | >8:00 |
| Sound Deletion | Time 1 | 55 | 95 | 37 | 5:10 |
| | Time 4 | 55 | 95 | 37 | 5:10 |
| Phoneme Awareness Composite | Time 1 | 48 | 86 | 18 | 5:04 |
| | Time 4 | 64 | 104 | 61 | 6:07 |

According to the EVT-2 classification system, Katie achieved a standard score of 91 ($27^{th}$ percentile) at T1 and 123 ($94^{th}$ percentile) at T5. There were improvements between the T1 Growth Scale Value score of 139 and the T5 score of 164. The growth in Katie's expressive vocabulary development during the intervention seems to be substantial (Table 9.12).

Table 9.12.

*Katie's EVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 65 | 91 | 97-100 | 39 | 27 | 37 | 4 | 5:3 | Average |
| T2 | 82 | 104 | 96-112 | 50 | 61 | 56 | 6 | 6:5 | Average |
| T3 | 87 | 109 | 100-119 | 54 | 73 | 63 | 6 | 6:11 | Average |
| T4 | 86 | 108 | 99-116 | 53 | 70 | 61 | 6 | 6.9 | Mod. High |
| T5 | 103 | 123 | 114-130 | 64 | 94 | 98 | 7 | 7:1 | Mod. High |

Similarly, Katie's receptive vocabulary increased substantially during the intervention (see Table 9.13). At T1 she achieved a standard score of 106 (66$^{th}$ percentile) and at T5 a standard score of 124 (95$^{th}$ percentile). According to the PPVT-4 Growth Scale Value there was an improvement between the T1 GSV score of 146 and the T5 GSV score of 165, an improvement of 19 points. The growth in Katie's receptive vocabulary development during the intervention also seems substantial.

Table 9.13.

*Katie's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 106 | 106 | 101-111 | 146 | 66 | 58 | 6 | 6:5 | Average |
| T2 | 115 | 110 | 104-115 | 150 | 75 | 64 | 6 | 6:9 | Average |
| T3 | 108 | 107 | 102-112 | 147 | 68 | 60 | 6 | 6:7 | Average |
| T4 | 116 | 111 | 105-116 | 151 | 77 | 65 | 6 | 6:9 | Average |
| T5 | 134 | 124 | 118-129 | 165 | 95 | 84 | 8 | 8:5 | Mod. High |

Katie's T1 PPVT-4 standard score and EVT-2 standard score, indicate that she performed better on receptive vocabulary tasks than on expressive vocabulary tasks. This difference may indicate that Katie had a weakness with word retrieval at that point in time.

**Case Five: Liam**

Liam is a male child enrolled in Prep who was 6 years and 3 months of age at the time of initial testing (Time 1) for phase three. Karen, Liam's mother did not complete and return the questionnaire prior to the phase three intervention; however, information on her questionnaires from phase one and phase three post intervention indicates that the family had a tablet device, iPod and iPad in their home. The information also indicates that Karen perceived iPads in education positively but didn't like that she had to recharge them when they were flat. She believed reading digital and print books would help her children with their learning, and using an iPad at home and school would have a positive effect. Karen started reading to Liam when he was three years old to help him to learn, but did not articulate how or what she believed her child would learn through reading with her. Whilst the family had

children's print books in the home, newspapers and magazines were the only printed texts available for adults to read. Karen's highest level of education was college and her partner did not complete high school.

During the interview Karen explained that Liam's 8-year-old sister (Felicity) usually read the digital books with Liam. At times the children would sit with their mother as they shared the book. Upon further questioning it was apparent that the family were not reading dialogically. The mother did not ask her children questions and the children did not ask them. The children "mainly just read it and play with it". This finding is consistent with the findings from the shared reading videos. At Karen's request, Felicity was involved in all of the shared reading sessions that were videoed, as this was their usual practice at home. At no time in the T1, T4 or T5 videos did Karen employ the PEER and CROWD dialogic reading strategies or the concepts about print strategies discussed during the two-way knowledge exchange sessions and featured in the Keynote presentations on the iPad. The only closed questions were rhetorical or functional questions, for example, how the book was to be read. In the T5 video, however, limited dialogic reading behaviours were present as the family read *Shark Goes to the Doctor*. Karen explained that people make soup from shark fins and necklaces from sharks' teeth, and that "some sharks help fishes". Karen did interact with her children in the T1 and T5 videos, and her comments were mostly instructional in nature (listen to it, listen to the story, read it Liam, you were supposed to read, Liam) or comments about the interactive elements (that's cute, that's pretty cool isn't it). Liam resisted Karen's repeated efforts to get him to read the book himself, reminding his mother that he cannot read, and choosing instead to listen to the audio recordings in all three videos. In the T4 reading of *Quaky Cat* Liam began touching the words on the screen to hear them read aloud individually, but quickly reverted to the narration option. He appeared to become bored with the story, and quickly swiped through the pages until the end of the book. The shared reading episodes were very busy, with Liam imitating the animals on the screen in *Rumble in the Jungle* and engaging with the interactive elements in all the digital books. His sister and mother became frustrated at times, with their efforts to encourage him to read or concentrate on the story ignored.

Karen had difficulty remembering the digital book titles that Liam had read over the past 10 weeks and was unsure what Liam's favourite digital book was, suggesting *Rumble in the Jungle*, *Toy Story*, and *Shark Goes to the Doctor*. Felicity nominated the *Fantastic Flying Books of Mr. Morris Lessmore* and Liam nominated *Shark Goes to the Doctor*. Julia could

not remember accessing the Keynote presentations. Whilst Karen agreed that the two-way knowledge exchange sessions were helpful for her she was unable to articulate how they were helpful or how they changed how she read with her children. The frequency of Liam reading books increased during the intervention with his mother attributing this to her son's increased engagement with the interactive features. As she explained in the interview, "I think they are more interesting aren't they and it keeps his attention longer, don't they. Where the books (print), they are boring". Liam asked to be read to from a digital book more frequently than a print book as he enjoyed the digital reading experience more than the print reading experience. Karen described how both children were able to use the iPad during the intervention and agreed that it had been beneficial to their learning. When asked if her opinion about iPads in education had changed since Liam brought the iPad home, Karen replied, "Yes, because I didn't think I would like it but I did. Yes, really liked it…Yeah, because I was one for reading in the paper books and then I thought, no, this is all new here. It is good. Mmm."

With regards to the literacy assessments, Liam make little progress with his phonological abilities, however, he made progress with his expressive and receptive vocabulary development. Liam attained the following scores on YARC Early Reading at T1 and T4 (Table 9.14).

Table 9.14.

*Liam's YARC Early Reading*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 41 | <70 | 2 | <5:01 |
| | Time 4 | 59 | 71 | 3 | 5:01 |
| Early Word Recognition | Time 1 | 0 | <70 | 2 | <5:01 |
| | Time 4 | 0 | <70 | 2 | <5:01 |
| Sound Isolation | Time 1 | 39 | <70 | 2 | <5:00 |
| | Time 4 | 74 | 88 | 21 | 6:05 |
| Sound Deletion | Time 1 | 67 | 93 | 32 | 6:09 |
| | Time 4 | 61 | 85 | 16 | 6:03 |
| Phoneme Awareness Composite | Time 1 | 48 | 76 | 5 | 5:04 |
| | Time 4 | 61 | 89 | 23 | 6:03 |

According to the EVT classification system, Liam's expressive vocabulary functioning was within the average range at T1; however, by the end of the ten week intervention, his progress resulted in a score that elevated him to the moderately high range (see Table 9.15). Liam achieved a standard score of 107 (68$^{th}$ percentile) on EVT-2 at T1 and a standard score of 117 (87$^{th}$ percentile) at T5. There was an improvement between the T1 and T5 EVT-2 GSV scores with T5 placing him in the moderately high range.

Table 9.15.

*Liam's EVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 87 | 107 | 98-115 | 154 | 68 | 60 | 6 | 6:11 | Average |
| T2 | 78 | 99 | 91-107 | 148 | 47 | 49 | 5 | 6:1 | Average |
| T3 | 92 | 112 | 103-120 | 157 | 79 | 67 | 7 | 7:5 | Average |
| T4 | 84 | 101 | 93-109 | 151 | 53 | 51 | 5 | 6:7 | Average |
| T5 | 117 | 117 | 108-125 | 161 | 87 | 74 | 7 | 8:0 | Mod. High |

Similarly, there was an improvement between Liam's PPVT-4 standard scores at T1, where his receptive vocabulary functioning was in the average range, and T5, where his scores elevated him to the moderately high range (see Table 9.16). Liam achieved a PPVT-4 standard score of 100 (50$^{th}$ percentile) at T1 and 121 (92$^{nd}$ percentile) at T5. According to the PPVT-4 Growth Scale Value scale he had marked changed between the GSV scores at T1 of 143 to the GSV score of 164 at T5.

Table 9.16.

*Liam's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 102 | 100 | 94-106 | 143 | 50 | 50 | 5 | 6:3 | Average |
| T2 | 109 | 103 | 97-109 | 146 | 58 | 54 | 5 | 6:6 | Average |
| T3 | 106 | 103 | 97-109 | 146 | 58 | 54 | 5 | 6:5 | Average |
| T4 | 121 | 110 | 103-116 | 154 | 75 | 64 | 6 | 7:2 | Average |
| T5 | 132 | 121 | 114-127 | 164 | 92 | 79 | 8 | 8:3 | Mod. High |

**Case Six: Quentin**

Quentin is a male child enrolled in Grade 2 who was the oldest participant in the third phase. He was 7 years and 8 months of age at the time of initial testing in phase three (Time 1). Quentin's mother, Zara, has three children, of which Quentin is the second born. Zara's highest level of education was high school. Prior to the intervention, Quentin's parents were reading print books to him for 15 minutes a day, six days a week and the frequency and duration of Quentin reading print books independently was the same. They were not reading any digital books. Zara believed that reading print books was helpful for her child's learning, even so she was unsure if reading digital books would be as beneficial. In contrast, Zara reported that using an iPad at home and at school would have a positive effect on Quentin's learning. The family owned print books for children and adults but did not own digital books. Zara enjoyed reading newspapers and magazines. She had been reading to Quentin since he was one-month old, listing parent/child enjoyment, school requirement, and helps them learn as the reasons she did so.

At the completion of the intervention, Quentin was frequently asking to be read to from digital and print books equally. Zara was spending 30 minutes a day reading with Quentin (an increase of 15 minutes a day) and Quentin was spending 15 minutes a day reading to himself. He enjoyed having the iPad read to him, a feature Zara appreciated. Having the iPad and digital books in the home had a positive effect on other family members as well, with Quentin's younger sister asking to be read to from the iPad. Zara was primarily responsible for reading the digital books with her son, but Quentin's father also began reading to him more often. Zara explained that whereas she would spend time discussing or sounding out a word, her husband wasn't used to using those strategies. Instead, Quentin would show his father what he could do on the iPad and demonstrate how he could read. Zara felt the experience of reading digital texts was more engaging for her husband and that he would read with his son more often if they always had access to them at home.

Quentin was reading digital books more frequently than print books and he continued to read both. During the interview, Zara explained how Quentin becomes more involved with a digital book because of the different viewing and interacting options afforded by the iPad:

> *He can touch the iPad and have it do different things and sounds…It keeps him entertained. He gets quite bored quite easily, quite quickly, so I think that it is, because he can interact with it in different ways, it is keeping him motivated to want to read the story and get to the next page to see what else he can press and touch and do…I see the way he will sit up with it and, you know, it's a consistent. Like his home reader (*levelled text*) every night, that's an effort to get him to go and sit down and read the book. But, if I say go and read a book off here* (iPad), *Whh Gone!*

Zara said that the school could support her by putting home-readers on the iPads for children to read at home explaining:

> *That would make quite a bit of difference because it is a struggle to get him to sit down of an afternoon and get him to read it every single night. You know, some days that is just not going to happen. Whereas, I have never had to argue with him about going and get his iPad out and reading.*

Zara described their typical digital shared reading routine, noting it was dependent on Quentin's mood. Quentin was able to choose the story they shared and whether the story was read by Zara or by the narrator. They discuss whether the book is familiar prior to the reading and go back over the story after the completion of the reading. Zara asks him about his favourite part or what he thought was funny. Early in the intervention, Zara found the interactive features in the digital books distracting, however, as the novelty wore off, this became less of a problem. Zoe never discussed concepts about print such as punctuation with Quentin, as she felt he wasn't ready for it. The *Fantastic Flying Books of Mr. Morris Lessmore* was Zara's choice for her favourite book, as she liked the storyline. She believed that *Toy Story* was her son's favourite book, noting her family "are big Toy Story fans anyway".

Zara reported that whilst the Keynote presentations on the iPad were helpful and interesting to watch, they contained some information that she already knew and, thus, the way she read books with Quentin hadn't changed.

With regard to the literacy assessments, Quentin's YARC assessment indicates difficulties with phonological abilities and recognising basic words. He made improvements in his expressive and receptive vocabulary development during the digital reading intervention. Quentin attained the following scores on YARC Early Reading at T1 and T4 (Table 9.17).

Table 9.17

*Quentin's YARC Early Reading at T1 and T4*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound | Time 1 | 67 | 81 | 10 | 5:07 |
| Knowledge | Time 4 | 69 | 84 | 14 | 5:09 |
| Early Word | Time 1 | 53 | <70 | 2 | 6.00 |
| Recognition | Time 4 | 59 | <70 | 2 | 6:02 |
| Sound | Time 1 | 67 | 81 | 10 | 5:11 |
| Isolation | Time 4 | 100 | 111 | 77 | 8:09 |
| Sound | Time 1 | 67 | 91 | 27 | 6:09 |
| Deletion | Time 4 | 61 | 83 | 13 | 6:03 |
| Phoneme | Time 1 | 61 | 89 | 23 | 6:03 |
| Awareness | Time 4 | 67 | 94 | 34 | 6:11 |
| Composite | | | | | |

Quentin made gains with his expressive vocabulary development during the intervention (see Table 9.18). At T1, he achieved an EVT standard score of 98 (45$^{th}$ percentile) and at T5 a standard score of 108 (70$^{th}$ percentile). According to the EVT-2 GSV scores, there was an improvement of 8 points. His Growth Scale Value score changed from 157 at T1 to his EVT Growth Scale Value score of 165 at T5.

Table 9.18.

*Quentin's EVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 91 | 98 | 91-105 | 157 | 45 | 47 | 5 | 7:4 | Average |
| T2 | 86 | 93 | 86-101 | 153 | 32 | 40 | 4 | 6:9 | Average |
| T3 | 94 | 98 | 91-105 | 158 | 45 | 47 | 5 | 7:7 | Average |
| T4 | 102 | 103 | 96-110 | 162 | 58 | 54 | 5 | 8:2 | Average |
| T5 | 105 | 108 | 110-115 | 165 | 70 | 61 | 6 | 8:9 | Average |

Quentin's receptive vocabulary functioning remained in the average range from T1 to T5, with improvements were evident across the ten-week intervention (see Table 9.19). There was an improvement between his PPVT-4 standard score of 92 (30$^{th}$ percentile) and 150 Growth Scale Value points at T1 and his standard score of 106 (66$^{th}$ percentile) and 165 Growth Scale Value points at T5 demonstrating steady change in Growth Scale Value points.

Table 9.19.

*Quentin's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 112 | 92 | 85-99 | 150 | 30 | 39 | 4 | 6:9 | Average |
| T2 | 113 | 91 | 84-98 | 149 | 27 | 37 | 4 | 6:8 | Average |
| T3 | 112 | 90 | 83-97 | 150 | 25 | 36 | 4 | 6:9 | Average |
| T4 | 129 | 99 | 92-106 | 159 | 47 | 49 | 5 | 7:10 | Average |
| T5 | 133 | 106 | 99-113 | 165 | 66 | 58 | 6 | 8:4 | Average |

There were little differences between Quentin's EVT-2 and PPVT-4 scores at either T1 or T5, indicating that he has a similar command of his receptive and expressive vocabulary skills.

**Case Seven: Rheece**

Rheece is a male child enrolled in Grade 1 who was 6 years and 9 months of age at the time of initial testing (Time 1) for phase three. He is an only child and lives between his father's and his mother's homes. Both parents, Imogen and David, attended the information session prior to the intervention and both parents were involved, at different times, in the two-way knowledge exchange sessions at the school. Imogen's highest level of completed education was college. Imogen enjoys reading and estimated that her print book collection contained hundreds of children's books and 41-50 adult's books. They did not have any digital books in the home. Imogen had been reading to Rheece since he was four months of age. Prior to the intervention, in a typical day Imogen spent 90 minutes a day reading print books to Rheece

and he spent 60 minutes reading independently. His independent reading increased by 15 minutes to 90 minutes a day during the digital shared reading intervention. Imogen suggested that more digital books be added to the iPads, as only having a limited number of titles was frustrating for her son. Rheece frequently talked about the stories he was reading, with his mother commenting in reference to digital books, "It's all I hear about when he comes home from school".

Rather than asking to be read to, Rheece preferred to read the books and ask his mother about word definitions and spelling. Rheece also used the dictionary app on the iPad to find definitions and took advantage of the tap to see or hear a definition feature in some of the digital books. Imogen spoke about a role reversal situation where she had become the learner and Rheece had become the teacher, teaching her how to use the iPad. The interactive features in the iPad were at times viewed as a distraction for as Imogen explained,

> *He just gets to a point where he wants to show you all the interactive things and isn't worried about the book anymore…I don't think it's really detracting from it (the learning) because he can still tell you what the story is and what's on a particular page and what is does and how it relates to the story and all that stuff.*

When reading together, Rheece usually reads the story, but on occasions will listen to the narration. When he didn't like the sound of a narrator's voice in one of the digital books, he recorded his own narration to listen to. Rheece talks about the book before, during and after the reading, connecting the content of the book to his own life experiences, or his experiences to a book he has read in the past and his mother encourages this dialogue. He often recounts the stories of books he has read to his mother. Imogen indicated that she discusses punctuation in the books but did not indicate that she employs any other strategies to help Rheece with his literacy development. Rheece usually read a story through from beginning to end and then engaged in the animations and hotspots. Imogen preferred the digital books that encouraged this type of reading, where the child reads the story first before being able to access the interactive features. For mother and son, *The Fantastic Flying Books of Mr. Morris Lessmore* was nominated as their favourite digital book; although *Toy Story* and *Kit Kit Koala* were also nominated as favourites of Rheece. Imogen believed he enjoyed the *Fantastic Flying Books of Mr. Morris Lessmore* because of the story and the interactive

features in the book, particularly the digital piano and the jigsaw puzzles. Rheece was happy to read the non-interactive digital books as well, and would frequently read the *Kit Kit* story to his friend of the same age.

It was evident from the T1, T4 and T5 shared reading videos that Imogen and Rheece were indeed reading dialogically: discussing new vocabulary; modelling and correcting pronunciation; prompting; evaluating; expanding; repeating, recalling, commenting, answering, and asking and answering questions. In the T1 video, they listened to the narrator read *Rumble in the Jungle* before Rheece read the story to his mother. The reading was highly interactive with both mother and son talking about every page in the book. At T4 Rheece read *Quaky Cat*, a story about how the cats of Christchurch, New Zealand, in the aftermath of an earthquake. Part way through the reading Imogen pauses and asked:

I: Do you understand what's happened?

*R: No, I don't understand.*

I: What do you think has happened?

*R: I don't know.*

I: Well keep reading and we'll see if we can figure it out (Rheece returns to his reading).

I: Do you think you can figure out what's happened?

*R: No, I can't (continues reading).*

I: Do you think you can figure out what's happened?

*R: No, just tell me.*

I: Keep going and see if you can figure it out (Rheece finishes reading the story).

I: That's the end of the book. So now can you tell me what happened?

*R: No.*

I: There was an earthquake and the cat got separated from his family.

Imogen said it was important for her son to try and make sense of the text on his own, and provided a very basic overview of the story when he couldn't. She did not, however, explain the message contained in the text that home is not just a building, it is the giving, and helping and sharing of family and friends.

Imogen had viewed the Keynote presentations on the iPad, however, she didn't find them necessary, as she felt she was already implementing the strategies discussed in the presentations. With regards to the digital shared reading intervention and two-way knowledge exchange sessions, Imogen acknowledged that families in the community needed access to the technology; however, she expressed concern that the iPads would not be returned.

With regards to the literacy assessments, Rheece attained the following scores on YARC Early Reading at T1 and T4 (Table 9.20):

Table 9.20.

*Rheece's YARC Early Reading Levels*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 82 | 103 | 58 | 7:09 |
| | Time 4 | 100 | 125 | 95 | 8:02 |
| Early Word Recognition | Time 1 | 76 | 93 | 32 | 6:08 |
| | Time 4 | 100 | 113 | 81 | 7:07 |
| Sound Isolation | Time 1 | 100 | 118 | 88 | >8:09 |
| | Time 4 | 100 | 118 | 88 | 8:09 |
| Sound Deletion | Time 1 | 79 | 110 | 75 | 7:10 |
| | Time 4 | 100 | >130 | 98 | 8:00 |
| Phoneme Awareness Composite | Time 1 | 80 | 115 | 84 | >8:01 |
| | Time 4 | 100 | >130 | 98 | >8:01 |

Rheece achieved an EVT standard score of 98 (45$^{th}$ percentile and Growth Scale Value score of 151) at T1. At T5 he achieved a considerably higher EVT-2 standard score of 123 (94$^{th}$

percentile and Growth Scale Value score of 168). His expressive vocabulary development was such that he moved from the average range to the moderately high range over the ten-week intervention (see Table 9.21).

Table 9.21.

*Rheece's EVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 82 | 98 | 91-105 | 151 | 45 | 47 | 5 | 6:6 | Average |
| T2 | 84 | 98 | 91-105 | 151 | 45 | 47 | 5 | 6:7 | Average |
| T3 | 90 | 103 | 96-110 | 156 | 58 | 54 | 5 | 7:2 | Average |
| T4 | 115 | 125 | 117-132 | 169 | 95 | 85 | 8 | 9:10 | Mod. High |
| T5 | 111 | 123 | 115-130 | 168 | 94 | 82 | 8 | 9:6 | Mod. High |

Rheece achieved a PPVT-4 standard score of 120 (91$^{st}$ percentile and Growth Scale Value score of 167), indicating that his receptive vocabulary functioning was within the moderately high range at T1. His receptive vocabulary functioning remained in the moderately high range at T5 where he achieved a standard score of 123 (94$^{th}$ percentile and GSV score of 171). At T4, Rheece obtained a standard score of 129 with a Growth Scale Value score of 176, an improvement of 9 GSV points from T1-T4 (see Table 9.22).

Table 9.22.

*Rheece's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 136 | 120 | 112-126 | 167 | 91 | 78 | 8 | 8:7 | Mod. High |
| T2 | 141 | 121 | 113-127 | 168 | 92 | 79 | 8 | 8:8 | Mod. High |
| T3 | 130 | 112 | 105-119 | 162 | 79 | 67 | 7 | 8:1 | Average |
| T4 | 152 | 129 | 121-135 | 176 | 97 | 91 | 9 | 9:9 | Mod. High |
| T5 | 142 | 123 | 115-129 | 171 | 94 | 82 | 8 | 9:1 | Mod. High |

There was a little difference between Rheece's PPVT-4 standard score and EVT-2 standard score at T5. Suggesting that his language development in both the expressive and receptive domain are progressing well.

**Case Eight: Samuel**

Samuel is a male child enrolled in Prep who was the youngest participant in phase three. He was 5 years and 8 months of age at the time of initial testing (Time 1). Samuel was a new recruit to the study and the only child not to have participated in phase two. Samuel was admitted to the study as he met the original age criteria and was in the same class as two of the other participants. Both his teacher and his mother (Dianne) were keen for him to be included. Dianne's highest level of education was high school. Prior to the phase three intervention, Samuel's mother and grandmother read traditional books to him approximately four times per week for five minutes. Samuel would read traditional print books by himself for approximately five minutes, five times per week. The family did not own any digital book reading devices; however, they did own a DVD player. Prior to the intervention, Dianne said

that reading paper books helped Samuel's learning; however, she was unsure whether using an iPad would have a positive effect on his learning.

At the beginning of the study, Samuel presented as a shy, softly spoken child who was difficult to understand. Dianne, a mother of three young children, attended the two-way knowledge exchange sessions and drop in sessions that were held during the intervention. Samuel's and Dianne's experiences of reading digital books on an iPad were very positive, with Dianne noting that her son "loves it". Samuel's reading experiences increased during the intervention, with his mum commenting that he was reading by himself "a lot more actually"; however, it is impossible to determine the frequency and duration of reading episodes as Dianne did not complete the self-reporting reading behaviours survey. Samuel continued to read traditional printed texts as well as the prescribed digital books during the intervention, with his mother noting that he still "wants to bring home his library book from school". Samuel and his mother particularly enjoyed the interactive features in the digital books, with Dianne remarking that her son loved to press the screen to see what happens. She stated that Samuel's increased reading activity could be attributed to the interactive features but also noted that he enjoyed reading the non-interactive books on the iPad because he could "still see the pictures as well". When asked to describe the ways in which they normally share a book together, Dianne indicated that Samuel and she read the book together and then he plays with the interactive features at the end of the reading, and this was evident in the shared reading videos.

Samuel's confidence with using the iPad and reading the stories increased from T2 to T5. During the first videoed shared reading session (T2), Dianne read *Hairy Maclary Show Business* (Dodd, 2012) with expression while holding the iPad. Whilst Samuel held the corner of the iPad briefly at the beginning of the reading, he did not attempt to touch the iPad during the rest of the story. There was no verbal communication between Dianne and Samuel before, during or after the reading; thus, no dialogic reading behaviours were evident. In contrast to the T2 video, limited basic dialogic reading behaviours were present in the second shared reading video (T3). Samuel sat very close to his mother as they listened intently to *Shark goes to the* doctor (Ruckus, 2013). He frequently attempted to touch the screen. Early in the reading, Samuel was impressed with the shark picture, exclaiming "wow", to which his mother replied "It's a shark". Similarly, when Samuel made sounds of agreement, his mother responded by affirming that "they are very sharp". He attempted to spell the word fish, in

response to being asked by the app to do so, by saying the word "fish". During the inbuilt game, his mother verbally affirmed his correct response. During the third reading (T4), Samuel once again sat very close to his mother as she read *Quaky Cat* (Noonan, 2011). Even though his mother repeatedly brushing his hand away, Samuel persisted in trying to touch the iPad screen. He successfully touched the screen to hear the cat meow before continuing to swipe subsequent pages (in what appears to be an attempt to find interactive features on the pages). At the completion of the story, Dianne stated "We've finished" and Samuel responded with "I need to do a painting". He proceeded to open the *Shark Goes to the Doctor* app, and take the iPad from his mother. He had difficulty hearing the app and his mother took the iPad from him, without speaking and attempted to raise the volume. Samuel thanked his mother, took the iPad from her and attempted to make the app work. Mum continued to try and raise the volume but was unsuccessful. She gave up and walked away, and the session ended. Samuel took command of the reading session and held the iPad in the fourth video (T5) as he attempted to read *There's a Wocket in My Pocket* (Seuss, 2011). His mother was considerably more relaxed than observed in the first video (T2) and both she and Samuel were smiling and happy. He used a mixture of recall (of repetitive and rhyming text), and visual and auditory cues to make meaning from the digital text, as he told his version of the Wocket story. In the beginning he had difficulty decoding the text and looked to his mother for assistance. Dianne offered to read it, but Samuel declined the offer, preferring to read it himself. He tried again, continued to have difficulty and repeated the familiar "Have you ever seen a Wocket in …" phrase. Dianne tried to take the iPad from him and said, "Here look". A tug of war type battle ensued between mother and son, with Samuel determined to keep command of the iPad and the story. Mum explained that she will do it so he can press the "letter". Samuel moved the iPad to the opposite side of his body, and out of the reach of his mother, and fluently continued to tell his version of the story. He moved the iPad back to his lap and used the tap to hear a word feature to make meaning of the text. He self-corrected when he realised that the written word was sink, rather than his original attempt of bathtub. At 3.20 into the video, Samuel was unsure about the words on the page and looked to his mother for assistance. When Dianne did not respond, Samuel tapped the screen to hear the individual words; however, he tapped them in the incorrect order. Dianne demonstrated how to tap them in the correct order and Samuel became frustrated. Samuel also became less confident and looked to his mum again several times when he was unsure how the story line proceeded. Dianne did not respond. Samuel shrieked softly as he looked at the picture that

appeared to have three heads. Dianne tapped the screen to access and listen to the narration on one page and Samuel continued telling the story following the same pattern he had used throughout the reading, "Have you ever seen a wocket……..?" After 4.20 minutes of reading, Samuel looked to Dianne and said, "You read some now mum". Dianne told him he could stop and asked if he wanted to stop it now. Samuel nodded and she told him to sit the iPad down. Still holding the iPad, he told her he wanted the shark book. Dianne responded by taking the iPad from him and telling him they were finished.

The following excerpt from the interview transcript provides insight into Dianne and Samuel's shared reading experiences with the iPad at home.

> *Dianne: Sometimes I will read it to him, but then he likes to press the words and read himself. Like, he pressed the button, say the word and he'll say it.*
>
> Researcher: Oh, so he repeats it? … Oh that's very good.
>
> *Dianne: He is reading himself but he presses the words to see what it says.*
>
> Researcher: So does he prefer you to read it, or for him to press the word to hear it?
>
> *Dianne: I read it once or twice and he is like, "give it to me" and press it and he'll read along himself….*
>
> Researcher: …has anything else changed about the way he reads books, since you've been doing this study?
>
> *Dianne: Well, when he was reading his home reader, after I said the word, he was saying it…so he was doing the same thing, just on a normal paper book.*
>
> Researcher: Oh, so he learned that from the iPad?
>
> *Dianne: Yeah.*

Dianne did not find the interactive features in the e-books frustrating or distracting, and explained that her son loves them. She found it difficult to identify her favourite digital book from the nine that were loaded on the iPad, explaining that she liked them all. Dianne believed that her son's favourite books were the *Fantastic Flying books of Mr. Morris*

*Lessmore* (Joyce, 2012) and *Shark Goes to the Doctor* (Ruckus, 2013), and attributed his preferences to the interactive games and "play things". He particularly liked the game at the end of *Shark Goes to the Doctor,* because he could "play find the letter". Dianne found the parent information on the iPads helpful, despite admitting that she had only looked at them quickly. She described the parent sessions as "good" because she had "found out different things about the iPad" and indicated that if the sessions were offered again she would like to be involved so she could help Samuel and her other children. If a school, centre or community place was to offer a service where parents could borrow iPads loaded with books and learn how to help their children learn to read, Dianne believed that people would be interested in taking advantage of the opportunity. Once they had a chance to "go to it once and learn how to do it". Dianne thought they would come back again. Whilst Dianne believed using the iPad was helping Samuel learn and he was doing really well, she did not believe he was more excited about his learning. Dianne's opinions about iPads in education changed as a result of her participation in the digital shared reading experience. Prior to the intervention, she was unsure if using an iPad would help her son with his learning; however, she admitted that her experience using the iPad for reading had changed this. Throughout the interview,

Dianne kept reiterating that the experience had been 'really good' for her and her son. Dianne's younger children enjoyed watching the Toy Story digital book on the iPad and taking pictures with the inbuilt camera; however, they did not get to use it often as Samuel felt that the iPad was his. At the completion of the interview, Dianne stated, *I am hoping that they do it next year because I'd like (Isabelle) to do it too. She loved it too*

Samuel did not reach criteria on any of the literacy assessment measures at the initial time of testing. His understandings of Concepts about Print (CAP) improved considerably during the intervention, particularly with regard to directional rules of print, concept of first and last, and word-by-word matching. His understanding about punctuation, however, was limited to full stops at the final CAP assessment at T4. He found it difficult to differentiate between letters and words at T1 and this did not change at T4. Dianne indicated during the interview that she didn't discuss punctuation with Samuel when they were reading the digital books together during the intervention. His CAP score at T1 was only 5/24; however, at T5 he achieved a score of 14/24.

At T1, Samuel showed an uneven profile on YARC Early Reading. The test scores demonstrate that he was having difficulty with aspects of learning to read, particularly sound isolation and early word recognition. Whilst Samuel had an average knowledge of graphene-phoneme correspondence for his age, and was able to delete sounds adequately, he had severe difficulty isolating sounds. At T4, it was evident that Samuel had made sound progress with letter sound knowledge and significant progress with sound isolation and sound deletion; however, his early word recognition remained a concern.

Samuel was unable to read any of the words on the YARC Single Word reading test. Similarly, he only read one word, of a possible 26, on the YARC Passage Reading Beginner Level Form A, assessment at T1. He received a score of four from a possible score of eight on this comprehension assessment. At the time of final testing, Samuel was able to read five words, from a possible 27 on the YARC Passage Reading Beginner level Form B. His comprehension remained the same with a score of four from a possible score of eight.

Samuel attained the following scores on YARC Early Reading at T1 and T4 (Table 9.23):

Table 9.23.

*Samuel's YARC Early Reading*

| | | Ability Score | Standard Score | Percentile Rank | Age Equivalent |
|---|---|---|---|---|---|
| Letter Sound Knowledge | Time 1 | 52 | 88 | 21 | 5.01 |
| | Time 4 | 67 | 99 | 47 | 5.07 |
| Early Word Recognition | Time 1 | 10 | 86 | 18 | <5:02 |
| | Time 4 | 17 | 83 | 13 | 5:02 |
| Sound Isolation | Time 1 | 25 | 73 | 4 | <5:01 |
| | Time 4 | 85 | 112 | 79 | 7:03 |
| Sound Deletion | Time 1 | 43 | 93 | 32 | 5:03 |
| | Time 4 | 73 | 115 | 84 | 7:03 |
| Phoneme Awareness Composite | Time 1 | 34 | 80 | 9 | <5.0 |
| | Time 4 | 71 | 115 | 84 | 7:05 |

Samuel's receptive functioning was in the average range at T1, but improvements in his language development during the intervention resulted in a score in the moderately high range at T5.

On the PPVT-4, Samuel achieved a standard score of 104 (61$^{st}$ percentile and Growth Scale Value score of 141) at T1 and a standard score of 130 (98$^{th}$ percentile and GSV score of 167) at T5. Samuel achieved an increased score of 26 Growth Scale Value points from initial to final testing, see Table 9.24.

Table 9.24.

*Samuel's PPVT T1 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent. | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| T2 | 101 | 104 | 98-110 | 141 | 61 | 56 | 6 | 6:1 | Average |
| T3 | 111 | 112 | 106-118 | 149 | 79 | 67 | 7 | 6:8 | Average |
| T4 | 115 | 113 | 107-119 | 150 | 81 | 68 | 7 | 6:9 | Average |
| T5 | 137 | 130 | 123-135 | 167 | 98 | 92 | 9 | 8:8 | Extreme High |

He achieved a standard score of 99 (23rd percentile and Growth Scale Value score of 134) on the EVT-2 at T1 and a standard score of 119 (90th percentile and Growth Scale Value score of 159) at T5. According to the EVT-2 GSV scores (Table 9.25), there was an increase of 25 points between the initial and final assessments.

There was difference between Samuel's PPVT-4 and EVT-2 scores at Time 1, indicating that Samuel performed better on receptive vocabulary tasks than expressive vocabulary tasks. This may indicate that he had a problem with word retrieval at that time.

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Table 9.25

*Samuel's EVT-2 – T5 Summary (Age Norms)*

| | Raw Score | Stand. Score | 95% CI | GSV | Percent | NCE | Stanine | Age Equiv. | Descript. |
|---|---|---|---|---|---|---|---|---|---|
| T1 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| T2 | 60 | 89 | 82-96 | 134 | 23 | 35 | 4 | 4:9 | Average |
| T3 | 84 | 111 | 104-118 | 152 | 77 | 65 | 6 | 6:8 | Average |
| T4 | 77 | 104 | 97-111 | 147 | 61 | 56 | 6 | 6.0 | Average |
| T5 | 95 | 119 | 112-125 | 159 | 90 | 77 | 8 | 7:8 | Mod. High |

Samuel's receptive vocabulary improved on the researcher's created receptive test the MPVT-2 during the intervention. Initial testing resulted in a score of 50 from a possible 90, and subsequent testing resulted in scores of 63, 67 and 70 respectively.

This chapter has presented the findings of phase three and provided an overview of the literacy assessment results obtained during this final phase. Data from the parent interviews, videoed shared reading sessions and children's literacy assessments were triangulated and presented as case studies. A discussion of the findings from phases one, two and three are presented in the following chapter

# Chapter 10 Discussion

The goal of this study was to examine the influence of a digital shared reading intervention on children's early literacy development and families' shared reading experiences. Primarily, the study specifically assessed children's expressive and receptive vocabulary, phonological abilities and concepts about print. The study also examined the effect of the intervention on families' experiences of reading digital texts, as communicated by the parents. This chapter will provide answers to the five research questions through a systematic discussion of the findings of the three-phase study.

The questions guiding this research project were:

1. Are parents of children in low SES schools using electronic books as a shared reading device with their young children?
2. How are parents using digital texts with their children?
3. What are the effects of reading digital texts on young children's early literacy development and does this differ from traditional reading practices?
4. What are parents' perceptions of the digital shared reading intervention?
5. How can the benefits of the digital shared reading intervention be maximised?

To examine these questions, phase one was conducted in which families were surveyed about their children's shared and independent digital and print book reading practices. In phase two, participants were assigned to one of two treatment conditions: a comparison group in which families read print paper based books and a digital reading group in which families read digital books on school provided iPads. The findings of phase two were used to answer questions two and three. To further examine questions two and to examine questions three, four and five, two-way knowledge exchange community sharing sessions were introduced during phase three. The sessions aimed to support the parents during the shared reading intervention, and maximise the benefits in terms of children's literacy development and parents' experiences of using iPads with their children.

**Question 1: Are parents of children in low SES schools using digital books as a shared reading device with their young children?**

Previous studies regarding families' reading practices and ownership of digital devices have highlighted the vast differences in digital device and traditional and digital book ownership among families (Gutnick et al., 2010; Scholastic, 2012, 2015). Prior to the shared reading intervention, mobile device ownership with digital book capabilities varied across the group, with the most popular being iPads (21%) and "Leap Frog" children's devices (21%). This finding is consistent with the findings of the "Learning at Home" study (Rideout, 2014) where only 27% of homes in the lowest income bracket had tablet devices in the home compared with 77% of homes in the highest income bracket.

Although in this study print books were more popular than digital books for both independent and shared reading, it is important to note that children were more likely to read digital books independently than for shared reading with an adult. Only 19% of parents indicated that they were using digital books for shared reading with their young children. In contrast, 28% of parents indicated that their child read digital books independently. The Kids and Family reading report (Scholastic, 2015) revealed that the percentage of children aged 6-8 who have read an e-book has increased steadily since 2010 from only 28% of children having read an e-book in 2010 to 65% in 2014. In 2012, 45% of children aged 6 years to 8 years had read an e-book (Scholastic, 2012), which is considerably more than the children in the present study during the same period of time. Whereas the findings from the Scholastic surveys were based on nationally representative samples of 2558 (2015) and 1074 (2012) parents and children and are, therefore, representative of families from a broad range of income levels, the findings from this study are based on families from schools situated in low income areas and may reflect the disparity between the samples.

**Question 2: How are parents using digital books with their children?**

Sharing books with children is one of the most important predictors of early literacy and later school success (National Early Literacy Panel, 2008). Digital books provide children with a different type of reading experience than print books, particularly interactive digital books that contain on-screen content involving animations, games, sound effects, quizzes, audio and supporting information such as word definitions.

A potential advantage of interactive digital books is that children may experience them in ways that previously required the support of a more experienced reader.

For children and adults who enjoy using digital devices, children who are reluctant readers and children whose parents have low levels of literacy, this study suggests that digital books are a useful tool to complement the traditional print books usually employed for shared reading programmes. Interactive digital books that have read aloud capabilities may be particularly beneficial for parents and carers with low literacy skills. Staff at the experimental school in phase two noted, anecdotally, that there were often low levels of literacy in the homes of the children at their school. This became evident at the parent information session prior to the commencement of phase two when some parents required the assistance of school staff and family members (grandparents) to read the information and consent forms for them.

The read aloud feature in digital books may be acting as a scaffold enabling families with low literacy levels to read more complex content than is otherwise possible with traditional print books. Vygotsky (1978) coined the term 'Zone of Proximal Development', or ZPD, to describe the distance between what an individual can achieve on their own and what they can potentially achieve with guidance or in collaboration with more knowledgeable others. It is possible that the features in the interactive book may act as a more knowledgeable other, empowering families to learn within a wider ZPD (Buckleitner, 2014; Korat, 2010). It is possible that the interactive features in digital books could empower all parents, regardless of their own literacy skills, to share digital books with their children and thus improve literacy outcomes for children at most risk of reading difficulties.

Some parents viewed the digital books as a substitute for print books when they were busy, particularly with household duties, and unable to sit down with the child and read. As such, the books were viewed as a supportive device, able to assist their children make sense of the text when the parent was unable to do so. These findings are consistent with the findings from the Vaala and Takeuchi (2012) study in which parents found the digital books particularly useful when they were either not around to read to children or when families were away from home.

Parents welcomed the use of the digital books to encourage their children to read. The interactive digital books appeared, as noted by the parents, to help the reluctant readers engage with the texts more frequently than had been the case with traditional print texts.

Roskos et al. (2012) asserted that engagement involves "self-direction, interaction, emotion, choice and a sense of competence" (p. 48) and the iPads and digital books seemed to afford these experiences. Children were able to read the books independently as well as with their parents (self-direction, competence, interaction and choice). They read for pleasure and enjoyed the interactive features (emotion, interaction and competence). Reading for pleasure has been associated with improved literacy outcomes (Kirsch et al, 2002), with Dugdale and Clark (2008) asserting it is the "most important indicator of the future success of a child" (p. 5). Since students who read for pleasure in their spare time and have access to a variety of materials are on average much better readers (Shanker & Cockrum, 2009), the digital shared reading intervention described in this thesis is a worthwhile consideration for schools seeking to increase reading for pleasure and improve literacy outcomes for students. Reading the digital texts increased reading frequency, however, it did not do so at the expense of reading print texts. The digital texts and iPads did not replace print texts, with the majority of parents reporting that their children continued to read printed texts during the intervention. Digital and print texts co-existed during the ten-week intervention in phase three.

The digital books played an important role in developing the young children's early literacy skills and enhancing the reading experience with and without parent assistance during the phase two and phase three interventions. Even so, it must be remembered that digital devices cannot replace the important contributions parents make to their children's literacy learning during shared reading. Children in this study read the books with adults and the books independently. Whether reading digital or print books, the parents and the families' contributions are important. On this point, Robb (2010) argued that digital interactive books can make a contribution to the child's reading but it is only one resource in a reading programme. The claim is that digital books can help children to be more motivated and interested in the reading activity as well as provide the reader with a limited set of prompts that support the readers' ability to comprehend the text and its associated vocabulary development, as well as develop the readers' ability to develop a personal reflection of the text.

**Question 3: What are the effects of reading digital texts on young children's early literacy development and does this differ from traditional reading practices?**

In phases two and three, the children were pre- and post-tested with the PPVT-4 and MPVT (measures of receptive language), and the HPNT (a measure of expressive language). In phase three all children were also tested with the EVT-2 to overcome issues with the ceiling effects in the HPNT instrument. Phonological abilities were assessed with the PAT in phase two; however, due to ceiling effects in the data, the PAT was replaced with the YARC in phase three. The children were also pre-tested and post-tested with the CAP, a measure of children's attention to print and their understandings about conventions of print.

The phase two results showed that the digital book reading group made similar progress to the comparison print book group in receptive vocabulary, expressive vocabulary, phonological abilities and concepts about print, suggesting that neither the comparison nor the intervention group were considerably disadvantaged or advantaged by the book medium, either print or digital. The effect of test occasion (T1–T2) was significant for both experimental (digital books) and comparison (print books) groups on PAT phoneme deletion (beginning sound), HPNT scores (expressive vocabulary), PPVT scores (receptive vocabulary) and CAP (concepts about print). The finding that the effect sizes for the digital book group and the printed book group were both high implies that the two learning mediums are of great value for acquiring expressive and receptive vocabulary, concepts about print, and knowledge of beginning sounds.

This finding confirms those findings of Shamir et al. (2012) who also reported similar evidence of high effect sizes for both e-book and print book groups on tests of vocabulary, phonological awareness and concepts about print. Shamir's et al. (2012) study of young children at risk of learning disability investigated the effects of reading digital and print books on phonological awareness, concepts about print and vocabulary. Children were assigned to one of three groups: reading an e-book with adult assistance, reading a print book with adult assistance, and a control group who received the regular kindergarten programme. Children in the digital book and print book groups were exposed to the books six times. In contrast to the finding of the present study, however, Shamir et al. (2012) identified that the children exposed to the e-book displayed significantly higher emergent literacy improvement (vocabulary and phonological awareness) when compared with the children who participated

in the print book and regular kindergarten groups. The significant and positive results obtained for the digital books in this study and that of the Shamir et al. (2012) study help to confirm the digital books' potential as complementary and or alternative devices for home-school shared reading programmes.

The phase three literacy assessment scores showed significant gains on MPVT and PPVT (measures of receptive vocabulary), HPNT and EVT (measures of expressive vocabulary), CAP (measure of children's understandings about print), YARC letter sound knowledge, YARC early word recognition, YARC sound isolation, and YARC phoneme awareness (measures of phonological abilities). Typically, the children, on average, obtained higher scores on later than on earlier test occasions on these tests. Five of the eight children improved their YARC sound deletion scores from T1 to T4, however, the effects were non-significant. Changes in YARC reading comprehension ability scores were also non-significant.

The digital shared book reading interventions in phases two and three had a positive effect on children's literacy development, particularly in relation to expressive and receptive vocabulary development. Previous studies have also shown that children's exposure to books and dialogic reading is related to children's vocabulary development (Bus et al., 1995; Malani et al., 2010; Mol et al., 2008; Sénéchal & Cornell, 1993; Shamir et al., 2012) and that children's early vocabulary acquisition is related to later language and literacy competence (Juel, 2006; Lee, 2011; Sénéchal & LeFevre, 2002).

Although data by cohort group were collected and were meaningful, one of the intentions of the researcher was to be able to better correlate the children's literacy achievement scores with the child's frequency and duration of exposure to the digital books. Unfortunately because of the limitations of conducting field based research with volunteers (Pillinger & Wood, 2013), not all of the parents returned their reading questionnaires. Those parents that did, the majority of parents across both cohort groups indicated that they had not completed their form systematically due to time demands and forgetting to complete it each time their child read in the home. Rather than provide possible misleading information it was decided that the data would be investigated at the cohort by intervention level. Difficulties with participants not systematically completing or returning questionnaires has been an issue for other researchers in the past (Pillinger & Wood, 2013). In the future, using technology to

track participants' use of digital books automatically may provide a more accurate picture of the frequency and duration of book readings and so is worthy of consideration for future research.

**Question 4: What are parents' perceptions of the digital shared reading intervention?**

Parents' perceptions of the digital shared reading intervention were positive, with all parents indicating that if a digital shared reading programme was offered in the future, they felt other parents would like to be involved. The parents were supportive of a similar digital shared reading intervention being offered at their school or to their local early learning centre in the future. Two parents were concerned that the iPads would not be returned to the school and two parents thought that time could be a barrier to busy families being involved with reading with their child.

With regards to the two-way knowledge exchange sessions, the majority of parents felt that they were more aware of dialogic reading behaviours and were consciously beginning to implement these strategies into their shared reading episodes with their children. Whereas some parents really appreciated the information about dialogic reading, others indicated they were already using dialogic reading strategies with their children. Whilst all families received written, verbal and visual information about dialogic reading and developing early literacy skills with digital books, not all families increased their dialogic reading behaviours during the intervention. Despite this, the overall trajectory across the five test occasions for expressive and receptive vocabulary was positive. Mol et al. (2008) conducted a meta-analysis of dialogic parent-child book reading and reported that dialogic reading did not always form a scaffolding of parent–child opportunities for early literacy development for all parents, and this was certainly the case for the present study. Whilst significant improvements in language development can be attributed to the parent-child dialogic reading behaviours, it is possible that they may also be attributed to children's repeated exposure to the vocabulary in the digital texts (Marsh & Singleton, 2009; Mol et al., 2008; Robbins & Ehri, 1994; Sénéchal & LeFevre, 2002), or the scaffolding features in the digital books (Smeets & Bus, 2015). For parents with no or limited prior experience with an iPad, the information regarding the mechanics of using an iPad was particularly beneficial. Parents appreciated the opportunity to share with and learn from other parents, and sound out ideas. Together they solved problems: about how to turn off the audio features they found frustrating; overcoming

issues with children being distracted by the interactive features and not concentrating on the story; and where to find particular books on the iPad, as some had difficulty finding the two iBook titles as they had to be accessed in the iBooks app, rather than from a particular e-book app on the home screen.

Seven of the eight parents reported that having access to the iPads and digital books was having a positive effect on their child's learning. One parent commented that her child was more engaged with the digital books than he had been with print books and asked if the school home readers (levelled reading texts) could be loaded onto the iPads in the future. Several parents requested a greater number of books be loaded onto the iPads to provide a larger selection from which to choose, in terms of reading difficulty and range of fiction and non-fiction titles to maximise the learning. Parents stated that the programme had a positive effect on their own learning with one parent acknowledging that the two-way knowledge exchange sessions had helped her learn to use an iPad and stay one step ahead of her child. Another parent explained that she had enjoyed her son teaching her how to use the iPad and digital books.

An unintended benefit of the digital shared reading intervention was access to the iPad and digital books for siblings of the child participants. Of the seven participants with other children in the home, six believed that having the digital books on the iPad was helping their other children learn at home. The seventh parent acknowledged that her younger daughter had used the iPad; however, she was unsure if her daughter's engagement with the digital books was helping her learn. She spoke about her mixed feelings regarding technology use for children and her desire to control and limit her children's use of technology.

Three parents believed that the digital texts had acted as a stimulus for fathers to be involved with their children's learning. Whilst mothers took primary responsibility for participation in the intervention, two participants believed that their husbands read more frequently with the digital books than they typically had with printed texts. One participant indicated that as she preferred to read print texts with her son, she had encouraged her husband to read the digital texts with him. This had resulted in the child's father assuming responsibility for the shared reading and thus reading to his son more often. A second parent believed the technology was the motivation for her husband to read with their child. A third parent did not comment on the frequency of her child's father reading with her child; however, it is important to note that the

father attended the initial information session and one of the two-way knowledge exchange sessions at the Child and Family Centre and was actively involved in supporting his son's engagement with the digital texts on the iPad. Given the research suggesting fathers' verbal exchanges with their children are directly related to children's language skills (Malin et al., 2012) and verbal exchanges are integral to successful shared reading experiences (Arnold et al., 1994), encouraging fathers to participate in digital shared reading with their children is of importance. Whilst involving fathers in children's literacy development is important for all children, it is particularly important for children living in low-income families. Children from low-income families are more likely to have slower vocabulary development than their middle- and high-income counterparts (Malin et al., 2012). Furthermore, since vocabulary development is a predictor of later school outcomes (Sénéchal & LeFevre, 2002) the benefits of involving fathers in digital shared reading cannot be ignored.

This has implications for further research as less is currently known about fathers' involvement in young children's literacy development (Clark, 2009; Morgan et al., 2009; Saracho, 2007a). Research that is currently available demonstrates that fathers can contribute to their children's literacy development and academic success by engaging in literacy practices that influence literacy learning (Saracho, 2007a). Further research is required into the benefits of fathers assisting their children's literacy development through digital shared reading. This also has implications for schools implementing digital shared reading initiatives. It is important for schools and children's centres to acknowledge the important contributions fathers make to their children's learning and consider the barriers to fathers engaging in home-school literacy initiatives. A first step would be to schedule sessions when it is convenient for fathers to attend (Saracho, 2007a). Education providers must ensure that fathers, as well as mothers, are supported to help their children develop early literacy skills and learn to read.

**Question 5: How can the benefits of the digital shared reading intervention be maximised?**

This study acknowledges that whilst there is considerable literature concerning the positive effects of parental involvement on literacy development there is some debate about the ways in which the home environment impacts on children's educational outcomes at school and the effectiveness of parental interventions (Mol et al., 2008). Interventions involving support for

parents are, however, more widely regarded as being effective (Close, 2001). Hence, guidance and support for parents were provided in phase three to enhance the effectiveness of the digital shared reading intervention.

Two-way knowledge exchange community sharing sessions were introduced for parents during the final phase to provide information about dialogic reading and the mechanics of using an iPad for reading digital texts, and to provide researcher and peer support for the parents. The study examined how parents could be supported and the barriers that needed to be overcome to provide this support. When partnering with parents and implementing home-school initiatives, it is important to consider the influence of factors at the parent and family, child, parent-teacher and societal levels that act as barriers to effective parent involvement. For a detailed analysis of barriers to parent involvement in their children's education see Hornby and Lafaele (2011).

Both qualitative and quantitative results demonstrated that the sessions with the parents had a positive effect on the children's literacy development and on parents' perceptions of the digital shared reading intervention. It is important to note, however, that a number of accommodations had to be made in order to facilitate the successful two-way knowledge exchange sessions and maximise the benefits of the digital shared reading intervention. During the first session held at the school, it was suggested by one participant that the Child and Family Centre, attached to the school, may be a more suitable venue for the meetings. It was explained to the researcher that one of the parents rarely came in to the school but visited the Centre frequently. Upon further investigation, the early learning environment of the Child and Family Centre was found to be an ideal location for the sessions. The Centres were established as a place where families with children (birth to five) could access a range of services. The goals of the Child and Family Centre closely aligned with the overarching goals of this digital shared reading intervention: improve educational outcomes for children, build on the existing strengths of families and communities and assist in their educational needs, increase participation in early years programmes, and build community capacity by developing partnerships with parents, carers and the community (Department of Education, 2015b). In this instance, Child and Family Centre staff were supportive of the sessions, the Centre offered small rooms suitable for videoing parent-child dyads reading together, and larger meeting rooms in which to hold the two-way knowledge exchange sessions. Participants felt comfortable in the warm, welcoming and familiar environment. Younger

siblings were able to attend and play happily whilst parents participated in the sessions. A further, unanticipated, benefit of the Child and Family Centre was access to transport for the participants. One participant in phase three did not have access to transport. Lack of access to transportation would have been a barrier to her participation in the study; however, Child and Family Centre staff were able to provide transport for her. Without the support of the staff, the parent would not have been able to participate and her child would not have benefitted from the intervention.

During the ten-week intervention, accommodations were also made to enable participants to access all aspects of the programme. Two-way knowledge exchange session times and days needed to be flexible and were changed to accommodate families' commitments outside the shared reading intervention. The researcher contacted the participants during the intervention to offer support, schedule meeting times and provide reminders about the two-way knowledge exchange sessions and children's assessments. As not all participants had access to the same forms of communication, a variety of options was provided. Participants chose to be contacted via email, SMS, mobile or landline phones, or letters. The best way to communicate with one parent was through the staff at the Child and Family Centre. Whilst some families preferred to be videoed reading with their child at the school, others preferred to be videoed at the Child and Family Centre. Initially, some parents chose to be present while their child's literacy assessments were administered and this required timetabling changes to accommodate the needs of the parents and the children's teachers.

Parents' responses to interview questions in phase two and phase three support the notion that for the digital shared reading intervention to be more successful in the future, a wider variety of texts are required to cater for the diverse preferences of young children. Parents requested access to a greater number of books, a wider range of reading levels and a wider choice of fiction and non-fiction titles. Shamir et al.'s (2012) pilot study findings indicated that motivation to work with the same e-book among 5-7 year old children decreases significantly after the sixth experience. Given that children in the present study received, on average, only one book per week and children read the books frequently, it is understandable that parents and children would prefer a wider variety of books.

Providing families with more options may help to alleviate the boredom reported by a minority of the parents with children who were prolific readers. Since wide reading supported

by rich discussions regarding new vocabulary "seems the most logical candidate to improve vocabulary growth" (Juel, 2006, p. 415), including a larger number and wider variety of texts for parents to share with their children would be logical for future interventions. Furthermore, it must be acknowledged that there are significant variations of e-books currently available for children to read. E-books ranged from simple digital versions of print books to highly interactive books that resemble movies or video games. When selecting digital books for children it is important to consider including books with the features that have the potential to scaffold children's learning: tap to hear word, tap to hear onset and rime, tap to hear words spelt out, read to me, inbuilt dictionary meanings, record own narration. This is particularly important for children who read digital books independently, or for families with low levels of parent literacy who, for a variety of reasons, may find it difficult to help their children develop their own literacy skills. Digital book developers seeking to improve learning outcomes for children must consider Vygotsky's (1978) concept of the 'Zone of Proximal Development and construct help mechanisms that support children with their learning (Buckleitner, 2014; Bus, Takacs, & Kegel, 2015), rather than mechanisms that distract children from their learning (Bus et al., 2015).

It was not the intention of this study to ascertain the specific features of e-books that contribute to children's early literacy development. Schools and centres considering implementing digital books as complementary or alternative shared reading tools may wish to consider the recent findings from Bus et al. (2015) who wrote:

> Animated pictures, sometimes enriched with music and sound, that match the simultaneously presented story text, can help integrate nonverbal information and language and thus promote storage of those in memory. On the other hand, stories enhanced with hypermedia interactive features like games and "hotspots" may lead to poor performance on tests of vocabulary and story comprehension. Using those features necessitates task switching, and like multitasking in general, seems to cause cognitive overload. However, in accordance with differential susceptibility theory, well-designed technology-enhanced books may be particularly suited to improve learning conditions for vulnerable children and turn putative risk groups into successful learners. (p. 79)

Similarly, Korat (2010) stated:

> Providing children with the written text together with synchronized narration accompanied by animated pictures and sound effects that relate directly to the storyline, providing a living dictionary with multimedia meaning of rare words, all seem to comprise good support for children's literacy development. (p. 30)

Although all parents in phase three receiving written, verbal and audiovisual information about dialogic reading and reading digital books with children, not all parents increased their dialogic reading behaviours, or supported their child to develop their phonological abilities or concepts about print. Encouraging dialogic reading and providing families with information about how to help their children develop literacy skills is not a guarantee that families will always heed this advice or that there will be behavioural changes for all parents (Mol et al., 2008). Providing families with digital books designed to support literacy development (vocabulary, phonological awareness, concepts about print and comprehension) may serve to help mediate this phenomenon.

Indeed, it is evident that promoting frequent and open two-way communication between parents and educators/researchers around students' literacy development and the mechanics of using an iPad are beneficial for parents, children and educators. Schools investing in digital reading initiatives need to consider providing opportunities for interactive discussions with parents about proven methods of developing children's literacy, families' shared digital reading experiences, and capitalising on the unique features offered in digital texts.

# Chapter 11 Conclusion

It needs be acknowledged that schools have a key role to play in the efforts to reduce the gaps that exist in education due to economic and social disadvantage; however, as Reardon (2013) argued "schools cannot be expected to solve this problem on their own, but they must be part of the solution" (p. 15). Providing families with access to digital technologies, such as iPads and digital books, to support their children's literacy development may help to bridge the academic and digital divide that exists in some communities.

Although the reported benefits of families reading with their children are widely understood in the education research community, the message is still not reaching all families in our communities. Interestingly, in a recent Scholastic (2015) study, only 47% of families from lower income households reported receiving advice that children should be read to from birth, whereas 64% of families from the highest income families received this advice. It is also widely understood that the percentage of families reading aloud to children declines as children age. The latest Kids and Family Reading Report (Scholastic, 2015) supports this notion with 55% of children aged 3-5, 34% aged 6-8 and 17% aged 9-11 having books read aloud to them 5-7 days a week. Of all the 6-11 year olds having books read aloud to them 83% enjoyed being read to at home because it was a special time with their parent (78%), fun (65%) and relaxing (54%). Evidence from the present study indicates that shared reading is not an activity that should be confined to the preschool years. Shared reading is important for developing children's literacy skills in Grades Kinder to 2. Furthermore, as the Scholastic (2015) findings demonstrate, the benefits of shared reading are not limited to academic achievement. Shared reading also contributes to the social and emotional wellbeing of the children.

The interactive features in digital books are conducive to independent reading, and as such may undermine the shared reading experience if families are not informed about the benefits of reading dialogically with their children. Interactive books do not replace parents as reading scaffolding partners (Robb, 2010) for as one participant in this study stated, "The iPad can't answer questions yet…It's not that clever". The aforementioned findings have important implications for educators working with families from all primary schools. It is important to share the "benefits of reading with children" message with all families, regardless of the

socio-economic status of the families in the school, the gender of the parents, or the age of the children involved.

**Limitations of the Study**

There are limitations to the current study. The samples for all three phases consisted of families from schools in low socio-economic areas of Tasmania. As participation was voluntary, it is conceivable that the sample is not representative of all families from the schools in this study. As evidenced in the interview and survey data, families held positive beliefs about reading with their children prior to participating in the digital shared reading intervention. It is possible that research with families from different demographic areas and families with negative beliefs about reading with children may yield different findings.

It is important to note that all survey and interview findings reported for the present study are based on parents' responses about their children. The children did not answer the survey or interview questions for themselves. It is possible that parents' estimates of the frequency and duration of their children's independent and shared reading experiences or their perceptions of their child's reading preferences may not be exact. It is, however, understood that parents' answers are more likely to be more accurate than answers obtained from children aged under ten years of age (Rideout, 2014).

Parent-child dyads were videoed sharing digital books at the school and child and family centre, rather than in the families' homes. Even though these were familiar and comfortable environments for the families in this study, they were not where families shared the books in their everyday lives. Furthermore, whilst families were asked to share the books in the same way they do at home, knowing they were being videoed may have altered the way families shared the books. Examining how parent-child dyads share digital books in the home environment would be an ideal next step for future research.

**Implications for Research Policy and Practice**

Even with these limitations, this study contributes to the literature in important ways. First, it demonstrates that families from schools in low socio-economic areas can benefit from digital shared reading initiatives that include providing iPads and digital books for families. Providing digital tablet devices and digital books for families from these schools may help to address the digital divide and reduce some disparities that exist in ownership and access to

digital technologies (Yelland, 2010, 2013). Longitudinal research could focus on the long-term effects of providing families with access to technology in the early years of school. Second, it demonstrates the importance of considering the barriers families face when accessing school and community programmes (Hornby & Lafaele, 2011).

Home-school interventions must be flexible, they must include opportunities for fathers and mothers to participate, and they must consider the individual needs of all stakeholders. Further research should examine the specific barriers fathers, mothers and carers have to overcome in order to participate in digital shared reading programmes and two-way knowledge exchange opportunities. Third, the benefits of this digital shared reading intervention were not confined to the child participants in this study. Mothers developed skills to develop their children's literacy skills and siblings had access to the iPads and digital books. Enhancing participants' reading development was the direct focus of this study. It is possible, however, that there were indirect benefits in reading to others involved in this study, such as parents and siblings. Future e-book reading research could investigate if parents and siblings also enhanced their reading engagement and performance as a consequence of having more reading occurring in the home. Future research should examine the effects of providing families with access to digital mobile media devices and digital books on all family members.

Evidence from the present study indicates that sharing the "benefits of reading digital texts with children" message is equally as important as sharing the benefits of reading traditional print texts. Children in this study were neither disadvantaged nor advantaged by the book medium. Children in the experimental group (digital texts) achieved similar test scores to children in the comparison group (print texts). In the majority of cases digital and print books coexisted, with children and their families continuing to read print books during the digital shared reading intervention. Indeed, there are multiple ways to encourage children's interest in reading, and for some children, digital texts provide a more engaging option than printed texts.

The findings from this study also support the notion that the two-way knowledge exchange associated with shared reading model benefits the child and the confidence of the mothers (Woolley, 2011). Shared reading with digital texts is worthy of consideration for teachers seeking to address the digital divide (Yelland, 2013) and cultivate authentic and meaningful partnerships between home and school, and increase the literacy achievements of

disadvantaged students attending schools in low socioeconomic areas (Elias et al., 2006). Assisting parents to read dialogically with their children may serve to improve the effects of such an intervention over a longer period of time, as evidenced in traditional shared reading research with printed texts (Fielding-Barnsley & Purdie, 2003), and is worthy of further investigation. Establishing home-school partnerships and providing flexible two-way knowledge-exchange activities should be important considerations when implementing one-to-one digital shared reading initiatives, for as Guernsey et al. (2012) asserted:

> Even parents without strong reading skills can make important contributions to their children's cognitive development and later reading success through conversation and joint engagement in learning via traditional and digital media (p. 2).

It is hoped that this study leads to more informed discourse and stimulates actions by teachers and early childhood education providers to implement digital reading initiatives that accommodate the individual needs of the families, and empower parents and children to share digital texts.

The results from this research demonstrated that children using digital books made similar and significant progress to those children reading paper based books, on measures of receptive vocabulary, expressive vocabulary, phonological abilities and concepts about print. This finding supports the case that the use of digital books by themselves does not disadvantage, or advantage, children's early reading development. The parent interview did however identify that the parents still needed direction on how to effectively use the digital features of the e-books, particularly the read along features within the digital text.

The core findings from this study do have application to home and school early reading support programmes. The evidence is that digital books do have a place in children's early reading development but they need to be seen as a component and not as a replacement for the parent and the teacher dialogue with the child around the shared books experience. The families in this study appreciated and benefited from the two-way knowledge exchange and they reported that they were more confident about using the special features of digital books and more confident about their role in the shared book activities and experiences with their children.

Teachers still have an important role in assisting and supporting parents on how to best utilise digital books in the home. As these books become more available and more common in the home, parents will still need to be encouraged to read along with and to talk with their child about the text. Regardless of the form of the text, parents still need to enjoy the experience and the opportunity that shared reading provides for nurturing their child's desire to want to read. In the final analysis children need to learn from the shared reading experience the pleasure reading provides to the child. Similarly, parents should experience the opportunity to spend some quality time with their children and focus on the experience and not the correctness of their child's initial practice with the read text.

This research offers significant and original findings to the field of education and digital technology research at a time when parent-child reading with digital books is of great interest to educators and researchers internationally. It is important to note that this is not a study about the merits of using digital versus traditional texts; rather, the findings suggest that the two modes of reading can co-exist and complement each other. The empirical data showed that the digital reading group made similar and significant progress to the traditional reading comparison group on measures of receptive vocabulary, expressive vocabulary, phonological abilities and concepts about print. Digital technologies provide new opportunities to make a difference in the lives of students and their families. Indeed, the digital shared reading intervention did make a difference in the lives of the children and their families. The two-way knowledge exchange sessions were effective in raising parents' confidence in their ability to support their children's early literacy development with iPads and digital texts. Digital texts provided added motivation for some children, particularly reluctant readers, to read more frequently. Furthermore, the digital texts also provided the motivation for fathers to participate in shared reading with their children. The flexible way in which the two-way knowledge sessions were implemented to accommodate the needs of the adult participants was important to the success of the intervention. Parents are important partners in their children's literacy development, and can be assured that both digital and traditional texts can be used to support this development.

# References


ACARA. (2012). *Australian Curriculum (English)*. Retrieved from: http://www.australiancurriculum.edu.au/english/curriculum/f-10?layout=1

ACARA. (2014). *Foundation to Year 10 Curriculum: English Glossary*. Retrieved 30 May, 2015, from http://www.australiancurriculum.edu.au/english/glossary

Ahlberg, J., & Ahlberg, A. (2011). *Each peach pear plum.* Retrieved from https://itunes.apple.com/au/book/each-peach-pear-plum/id459625626?mt=11

Arnold, D. H., Lonigan, C. J., Whitehurst, G. J., & Epstein, J. N. (1994). Accelerating language development through picture book reading: Replication and extension to a videotape training format. *Journal of Educational Psychology, 86*(2), 235-243.

Australian Beureu of Statistics (2014). *Educational outcomes, experimental estimates, Tasmania, 2006-2013* (ABS Publication No. 4261.6). Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/mf/4261.6

Australian Department of Education Employment and Workplace Relations & Council of Australian Governments. (2009). *Belonging, being & becoming [electronic resource]: The early years learning framework for Australia. PANDORA electronic collection.* Retrieved from: http://nla.gov.au/nla.arc-109966

Baker, L., & Scher, D. (2002). Beginning readers' motivation for reading in relation to parental beliefs and home reading experiences. *Reading Psychology*, *23*(4), 239-269. doi: 10.1080/713775283

Beekhuyzen, J., Nielsen, S., & von Hellens, L. (2010). *The NVivo looking glass: Seeing the data through the analysis.* Paper presented at the 5th Conference on Qualitative Research in IT. Brisbane.

Blom-Hoffman, J., O'Neil-Pirozzi, T., Volpe, R., Cutting, J., & Bissinger, E. (2007). Instructing parents to use dialogic reading strategies with preschool children. *Journal of Applied School Psychology*, *23*(1), 117-131. doi: 10.1300/J370v23n01_06

Borman, G., Benson, J., & Overman, L. (2005). Families, schools, and summer learning. *The Elementary School Journal, 106*(2), 131-150. doi: 10.1086/499195

Buckleitner, W. (2014). What would Maria Montessori say about the iPad? Theoretical frameworks for children's interactive media. In C. Donohue (Ed.) *Technology and digital media in the early years: Tools for teaching and learning.* (pp. 54-69). New York, NY: Routledge.

Bus, A. G., Takacs, Z. K., & Kegel, C. A. T. (2015). Affordances and limitations of electronic storybooks for young children's emergent literacy. *Developmental Review, 35*(0), 79-97. doi: http://dx.doi.org/10.1016/j.dr.2014.12.004

Bus, A. G., van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*(1), 1-1.

Butler, S. R., Marsh, H. W., Sheppard, M. J., & Sheppard, J. L. (1985). Seven-year longitudinal study of the early prediction of reading achievement. *Journal of Educational Psychology, 77*(3), 349-361. doi: 10.1037/0022-0663.77.3.349

Byrne, B., & Fielding-Barnsley, R. (1989). Phonemic awareness and letter knowledge in the child's acquisition of the alphabetic principle. *Journal of Educational Psychology, 81*(3), 313-321. doi: 10.1037/0022-0663.81.3.313

Cairney, T., & Munsie, L. (1992). *Beyond tokenism: Parents as partners in literacy*. Carlton, VIC: Australian Reading Association.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56,* 81–105.

Chall, J., & Snow, C. (1982). *Families and literacy: The contribution of out-of-school experiences to children's acquisition of literacy. Final report*. Harvard University, Cambridge, MA. Graduate School of Education.

CIERA. (2003). *Put reading first: The research building blocks of reading instruction kinder through grade 3* (2nd ed.). Retrieved from: http://homepage.mac.com/dlmolfese/PDF/PRF.pdf

Clark, C. (2009). *Why fathers matter to their children's literacy*. London, UK: National Literacy Trust.

Clark, C., & Akerman, R. (2006). *Social inclusion and reading: An exploration*. London, UK: National Literacy Trust.

Clay, M. (2007). *Concepts about print: What have children learned about the way we print language?* Auckland, NZ: Heinemann.

Clay, M. M. (1989). Concepts about print in English and other languages. *The Reading Teacher, 42*(4), 268-276. doi: 10.2307/20200110

Clay, M. M. (2000). *Concepts about print: What have children learned about the way we print language?* Auckland, NZ: Heinemann.

Clay, M. M. (2006). *Literacy lessons designed for individuals part one: Why? When? How?* Auckland, NZ: Heinemann Education.

Close, R. (2001). *Parental involvement and literacy achievement: The research evidence and the way forward*. London, UK: National Literacy Trust.

Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and a meta-analytic review. *Review of Educational Research, 66*(3), 227-268. doi: 10.3102/00346543066003227

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches.* (3rd ed.). Thousand Oaks, CA: SAGE.

DeBruin-Parecki, A. (1999). *Assessing adult/child storybook reading practices*. Ann Arbor, MI: CIERA.

DeBruin-Parecki, A. (2009). Establishing a family literacy program with a focus on interactive reading: The role of research and accountability. *Early Childhood Education Journal, 36*(5), 385-392. doi: 10.1007/s10643-008-0299-3

Department for Education. (2011). *The framework for the national curriculum. A report by the expert panel for the national curriculum review.* London: Author.

Department of Education. (2007). *The Tasmanian curriculum: English-literacy K-10 syllabus and support materials.*Tasmania: Department of Education.

Department of Education. (2011). *Tasmania's Education Performance Report 2011: Government Schools.* (DOC ID: TASED-4-1236). Retrieved from https://www.education.tas.gov.au/documentcentre/Documents/Tasmanias-Education-Performance-Report-2011.pdf

Department of Education. (2013). *Learners first: Connected and inspired*. 2014/2017 Strategy. Tasmania. Retrived from https://www.education.tas.gov.au/documentcentre/Documents/DoE-Strategic-Plan-2014-2017.pdf

Department of Education. (2014). *Learners first estrategy: Personalised learning anywhere, anytime.* Retrieved from https://www.education.tas.gov.au/documentcentre/Documents/eStrategy-Personalised-Learning-Anywhere-Anytime.pdf

Department of Education. (2015a). Heading in the right direction: Building on the momentum. Tasmanian Budget 2015-2016, Education. https://www.education.tas.gov.au/documentcentre/Documents/Tasmanian-Budget-2015-2016-Education.pdf

Department of Education. (2015b). *An overview of child and family centres.* Tasmanina Department of Education, Hobart, Tasmania, TASED-4-3679. Retrieved 02 July, 2015, from https://www.education.tas.gov.au/documentcentre/Documents/Overview-of-Child-and-Family-Centres.pdf

Department of Education Employment and Workplace Relations. (2008). *Family-school partnerships framework: A guide for schools and families*. Department of Education Employment and Workplace Relations. Barton, ACT.

Dickinson, D. K., McCabe, A., Anastasopoulos, L., Peisner-Feinberg, E. S., & Poe, M. D. (2003). The comprehensive language approach to early literacy: The interrelationships among vocabulary, phonological sensitivity, and print knowledge among preschool-aged children. *Journal of Educational Psychology*, *95*(3), 465.

Dixon-Krauss, L., Januszka, C. M., & Chae, C. (2010). Development of the dialogic reading inventory of parent-child book reading. *Journal of Research in Childhood Education, 24*(3), 266-277. doi: 10.1080/02568543.2010.487412

Dodd, L. (2012). *Hairy Maclary's show business*. Retrieved from https://itunes.apple.com/au/app/hairy-maclary-show-business/id570119015?mt=8

Dodd, L. (2012). *Slinky Malinki's Christmas Crackers.* Retrieved from https://itunes.apple.com/au/app/slinky-malinki-christmas-crackers/id570102033?mt=8

Dougherty Stahl, K. A., & McKenna, M. C. (Eds.). (2006). *Reading research at work: Foundations of effective practice*. New York, NY: Guilford Press.

Dugdale, G., & Clark, C. (2008). *Literacy changes lives: An advocacy resource*. London: National Literacy Trust.

Dunn, L. M., & Dunn, D. M. (2007). *Peabody picture vocabulary test: Manual (4th ed.)*. San Antonio, TX: NCS Pearson.

Dwyer, J., & Neuman, S. B. (2008). Selecting books for children birth through four: A developmental approach. *Early Childhood Education Journal, 35*(6), 489-494. doi: 10.1007/s10643-008-0236-5

Education Performance Services. (2013) *Launching into learning longitudinal study: Progress report 2013*. Retrieved from https://www.education.tas.gov.au/documentcentre/Documents/Launching-into-Learning-Longitudinal-Study-2007-2014-Report-2013.pdf

Edwards, S. (2005). The reasoning behind the scene: why do early childhood educators use computers in their classrooms? *Australian Journal of Early Childhood, 30*(4), 25-33.

Elias, G., Hay, I., Homel, R., & Freiberg, K. (2006). Enhancing parent-child book reading in a disadvantaged community. *Australian Journal of Early Childhood, 31*(1), 20-25.

Farstrup, A. E., Samuels, S. J. (Eds.) (2002). *What research has to say about reading instruction*. Newark, Delaware: International Reading Association.

Fielding-Barnsley, R., & Purdey, N. (2002). Developing pre-literacy skills via shared book reading. *Australian Journal of Learning Disabilities, 7*(3), 13-19. doi: 10.1080/19404150209546703

Fielding-Barnsley, R., & Purdie, N. (2003). Early intervention in the home for children at risk of reading failure. *Support for Learning, 18*(2), 77-82. doi: 10.1111/1467-9604.00284

Fisher, J. P., & Glenister, J. (1992). *Hundred pictures naming test*. Melbourne, Victoria: Australian Council for Educational Research.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction.* (A. E. Burvikovs Ed. 8th ed.). Boston, MA: Pearson.

Gonski, D., Boston, K., Greiner, K., Lawrence, C., Scales, B., & Tannock, P. (2011). *Review of Funding for Schooling—Final Report*. Canberra, ACT: Department of Education, Employment and Workplace Relations.

Green, D., & Campbell, R. (2003). *Literacies and learners: Current perspectives (2nd ed.).* Frenchs Forest, NSW: Pearson Education Australia.

Guernsey, L., Levine, M., Chiong, C., & Severns, M. (2012). *Pioneering literacy in the digital wild west: Empowering parents and educator*s. Retrieved from The Joan Ganz Cooney Center at Sesame Workshop, New York website: http://www.joanganzcooneycenter.org/wp-content/uploads/2012/12/GLR_TechnologyGuide_final.pdf

Guthrie, J. T., & Wigfield, A. (1999). How motivation fits into a science of reading. *Scientific Studies of Reading, 3*(3), 199-205. doi: 10.1207/s1532799xssr0303_1

Gutnick, A. L., Robb, M., Takeuchi, L., & Kotler, J. (2010). *Always connected: The digital media habits of young children.* The Joan Ganz Cooney Center at Sesame Workshop New York. Retrieved from http://www.joanganzcooneycenter.org/publication/always-connected-the-new-digital-media-habits-of-young-children/

Han, J., & Neuharth-Pritchett, S. (2013). Parents' interactions with preschoolers during shared book reading: Three strategies for promoting quality interactions. *Childhood Education, 90*(1), 54-60. doi: 10.1080/00094056.2014.872516

Hannon, P. (1995). *Literacy, home and school: Research and practice in teaching literacy with parents.* London: Falmer Press.

Harris, P., Turbill, J., Fitzsimmons, P., & McKenzie, B. (2006). *Reading in the primary school years (2nd ed.).* South Melbourne, Victoria.

Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* Retrieved from http://UTAS.eblib.com.au/patron/FullRecord.aspx?p=367685

Hay, I., & Fielding-Barnsley, R. (2007). Facilitating children's emergent literacy using shared reading: A comparison of two models. *Australian Journal of Language and Literacy, 30*(3), 191-202.

Hay, I., & Fielding-Barnsley, R. (2006). Enhancing the early literacy development of children at risk for reading difficulties. *Australian Journal of Learning Disabilities, 11*(3), 117-124. doi: 10.1080/19404150609546814

Heath, S. (1983). *Ways with words: language, life, and work in communities and classrooms*. New York: Cambridge University Press.

Hill, S. (2006). *Developing early literacy; assessment and teaching*. Prahran, Victoria: Eleanor Curtain Publishing.

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal, 2*, 127-160.

Hornby, G., & Lafaele, R. (2011). Barriers to parental involvement in education: An explanatory model. *Educational Review, 63*(1), 37-52. doi: 10.1080/00131911.2010.488049

Horst, J. S., Parsons, K. L., & Bryan, N. M. (2011). Get the story straight: Contextual repetition promotes word learning from storybooks. *Frontiers in Psychology, 2*. doi: 10.3389/fpsyg.2011.00017

Hughes, M., & Greenbough, P. (2006). Boxes, bags and videotape: Enhancing home-school communication through knowledge exchange activities. *Educational Review, 58*(4), 471-487. Retrieved from: http://doi.org/10.1080/00131910600971958

Hulme, C., Stothard, S., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E., & Snowling, M. (2012). *York assessment of reading comprehension: Early reading. (Australian edition)*. London: GL Assessment.

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly, 24*(4), 602-611. doi: 10.2307/2392366

Johnson, L., Adams, S., & Haywood, K. (2011). *The NMC horizon report: 2011 K-12 edition.* Austin, Texas: The New Media Consortium.

Joyce, W. (2012). *The fantastic flying books of Mr. Morris Lessmore*. Retrieved from https://itunes.apple.com/au/book/fantastic-flying-books-mr./id499131668?mt=11

Juel, C. (2006). The impact of early school experiences on initial reading. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research* (Vol. 2, pp. 410-426). New York: Guilford.

Kirby, J. R. & Savage, R. S. (2008), Can the simple view deal with the complexities of reading?. *Literacy*, 42: 75–82. doi: 10.1111/j.1741-4369.2008.00487.x

Kirsch, I., DeJong, J., LaFontaine, D., McQueen, J., Mendelovits, J., & Monseur, C. (2002). *Reading for change: Performance and engagement across countries.* Retrieved from http://dx.doi.org/10.1787/9789264099289-en

Kitzelman, S., & Kitzelman, K. (2010). *Hip Hop the Frog.* Retrieved from https://itunes.apple.com/au/book/hip-hop-the-frog/id409958718?mt=11

Knopf, H. T., & Mac Brown, H. (2009). Lap reading with kindergartners: Nurturing literacy skills and so much more. *Young Children, 64*(5), 80-87.

Korat, O. (2010). Reading electronic books as a support for vocabulary, story comprehension and word reading in kindergarten and first grade. *Computers & Education, 55*, 24-31. doi: 10.1016/j.compedu.2009.11.014

Korat, O., Shamir, A., & Arbiv, L. (2011). E-books as support for emergent writing with and without adult assistance. *Education & Information Technologies, 16*(3), 301.

Larson, J., & Marsh, J. (2013). *Handbook of early childhood literacy* (2nd ed). London: Sage.

Lee, J. (2011). Size matters: Early vocabulary as a predictor of language and literacy competence. *Applied Psycholinguistics, 32*(1), 69-92. doi: 10.1111/1467-8624.7402005

Lo Bianco, J., Scull, J., & Ives, D. (2008). *Research summary of the Oxford wordlist research study: An investigation of high frequency words in young children's writing and reading development*. South Melbourne: Oxford University Press.

Lonigan, C. J., & Whitehurst, G. J. (1998). Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. *Early Childhood Research Quarterly, 13*(2), 263-290.

Luke, A. (1993). Social construction of literacy in the primary school. In L. Unsworth (Ed.), *Literacy learning and teaching: Language as social practice in the primary school* (pp. 3-53). South Melbourne, VIC: Macmillan Education Australia.

Malani, M. D., Barina, A., Kludjian, K., Perkowski, J., Nye, C., & Schwartz, J. (2010). Added value of dialogic book reading for young children's vocabulary development. *Evidence-Based Communication Assessment and Intervention, 4*(4), 178-182. doi: 10.1080/17489539.2011.567891

Malin, J. L., Karberg, E., Cabrera, N. J., Rowe, M., Cristaforo, T., & Tamis-LeMonda, C. S. (2012). Father-toddler communication in low-income families: The role of paternal education and depressive symptoms. *Family Science, 3*(3-4), 155-163. doi: 10.1080/19424620.2012.779423

Marks, G. (2006). Are between- and within-school differences in student performance largely due to socio-economic background? Evidence from 30 countries. *Educational Research, 48*(1), 21-40. Retrieved from: http://www.informaworld.com/10.1080/00131880500498396

Marsh, J. (2002). Electronic toys: Why should we be concerned? A response to Levin & Rosenquest (2001). *Contemporary Issues in Early Childhood, 3*(1), 132-138.

Marsh, J. (2003). One way traffic? Connections between literacy practices at home and in the nursery. *British Educational Research Journal, 29*(3), 369-382.

Marsh, J. (2004). The techno-literacy practices of young children. *Journal of Early Childhood Research, 2*(1), 51-66.

Marsh, J. (2010). Young children's play in online virtual worlds. *Journal of Early Childhood Research, 8*(1), 23-39.

Marsh, J., Brooks, G., Hughes, J., Ritchie, L., Roberts, S., & Wright, K. (2005). *Digital beginnings: Young children's use of popular culture, media and new technologies*. Sheffield, England: University of Sheffield.

Marsh, J., & Singleton, C. (2009). Editorial: Literacy and technology: Questions of relationship. *Journal of Research in Reading, 32*(1), 1-5. doi: 10.1111/j.1467-9817.2008.01377.x

Merchant, G., Gillen, J., Marsh. J. and Davies. J. (Eds) (2012) *Virtual Literacies: Interactive Spaces for Children and Young People*. New York: Routledge.

McKee, D. (2011). *Elmer's special day.* Retrieved from https://itunes.apple.com/au/app/elmers-special-day/id434516399?mt=8

McKeown, M. G., Beck, I. L., Omanson, R. C., & Pople, M. T. (1985). Some effects of the nature and frequency of vocabulary instruction on the knowledge and use of words. *Reading Research Quarterly, 20*(5), 522-535.

McNab, K. (2012). *McNab picture vocabulary test: Form 1A*. Assessment instrument. Faculty of Education University of Tasmania (Unpublished). Burnie, Tasmania.

Ministerial Council on Education Employment Training and Youth Affairs. (2008). *Melbourne declaration on educational goals for young Australians. [electronic resource]*. Melbourne: Ministerial Council on Education, Employment, Training and Youth Affairs.

Mol, S. E., Bus, A. G., de Jong, M. T., & Smeets, D. J. H. (2008). Added value of dialogic parent–child book readings: A meta-analysis. *Early Education and Development, 19*(1), 7-26. doi: 10.1080/10409280701838603

Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory into Practice, 31*(2), 132-141.

Morgan, A., Nutbrown, C., & Hannon, P. (2009). Fathers' involvement in young children's literacy development: Implications for family literacy programmes. *British Educational Research Journal, 35*(2), 167-185. Retrieved from: http://www.informaworld.com/10.1080/01411920802041996

Murray, B. A., Stahl, S. A., & Ivey, M. G. (1996). Developing phoneme awareness through alphabet books. *Reading and Writing: An Interdisciplinary Journal, 8*(4), 307-322.

Murray, C., & Sloan, J. (2008). *iPod Touch research report*. Melbourne, VIC: Department of Education, Early Childhood Development (DEECD).

Muter, V., Hulme, C., & Snowling, M. (1997). *Phonological abilities test*. London: Psychological Corporation.

Muter, V., Hulme, C., & Snowling, M. (1997). *Phonological abilities test: Manual*. London.: Psychological Corporation.

Nagy, W., & Scott, J. A. (2006). The state of vocabulary research in the mid-1980s. In K. A. Dougherty Stahl & M. C. McKenna (Eds.), *Reading research at work: Foundations of effective practice.* (pp. 217-225). New York, NY: Guilford Press.

Nation, K. (2005). Children's reading comprehension difficulties. In M. J. Snowling & C. Hulme (Eds.), *The science of reading* (pp. 248-265). Oxford: Blackwell Publishing.

Nation, K., Snowling, M. J., & Clarke, P. (2007). Dissecting the relationship between language skills and learning to read: Semantic and phonological contributions to new vocabulary learning in children with poor reading comprehension. *Advances in Speech Language Pathology, 9*(2), 131-139.

National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Pane*l. Washington DC: National Institute for Literacy.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, DC: National Institute of Child Health and Human Development.

Neuman, S. B. (2005). The knowledge gap: Implications for early education. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of Early Literacy Research* (Vol. 2, pp. 29-40). New York, N.Y.: Guilford Press.

Neuman, S. B., & Celano, D. (2001). Access to print in low-income and middle-income communities: An ecological study of four neighborhoods. *Reading Research Quarterly, 36*(1), 8.

Neuman, S. B., & Celano, D. C. (2012). Worlds apart: One city, two libraries, and ten years of watching inequality grow. *American Educator, 36*(3), 13-23.

Nichols, W. D., Rupley, W. H., & Rasinski, T. (2008). Fluency in learning to read for meaning: Going beyond repeated readings. *Literacy Research and Instruction, 48*(1), 1-13. doi: 10.1080/19388070802161906

Nicholson, T., & Dymock, S. (2011). Matthew effects and reading interventions. *Perspectives on Language and Literacy, 37*(4), 28-33.

No Child Left Behind (NCLB). Act of 2001, *Pub. L. No. 107–110, § 115, 1425 Stat*. (2002) Washington DC.

Noonan, D. (2011). *Quaky Cat*. Retrieved from https://itunes.apple.com/au/app/quaky-cat/id519902131?mt=8

O'Leary, Z. (2010). *The essential guide to doing your research project.* London: SAGE.

Oakley, G., Pegrum, M., Faulkner, R., & Striepe, M. (2012). *Exploring the pedagogical applications of mobile technologies for teaching literacy.* Western Australia: Graduate

School of Education at The University of Western Australia and Association of Independent Schools of Western Australia.

Parish-Morris, J., Mahajan, N., Hirsh-Pasek, K., Golinkoff, R. M., & Collins, M. F. (2013). Once upon a time: Parent-child dialogue and storybook reading in the electronic era. *Mind, Brain, and Education, 7*(3), 200-211. doi: 10.1111/mbe.12028

Payne, A. C., Whitehurst, G. J., & Angell, A. L. (1994). The role of home literacy environment in the development of language ability in preschool children from low-income families. *Early Childhood Research Quarterly, 9*(3-4), 427-440. doi: http://dx.doi.org/10.1016/0885-2006(94)90018-3

Penuel, W. (2006). Implementation and effects of one-to-one computing initiatives: A research synthesis. *Journal of Research on Technology in Education, 38*(3), 329-348.

Penuel, W., Kim, D., Michalchik, V., Lewis, S., Means, B., Murphy, R., . . . Allen, J. E. (2002). *Using technology to enhance connections between home and school: A research synthesis.* Menlo Park, CA: Prepared for the Planning and Evaluation Services, U.S. Department of Education.

Pikulski, J., & Tobin, A. (1989). Factors associated with long-term reading achievement of early readers. *National Reading Conference Yearbook* (Vol. 38, pp. 123-133).

Pillinger, C., & Wood, C. (2013). A small-scale comparison of the relative impact of dialogic and shared book reading with an adult male on boys' literacy skills. *Journal of Early Childhood Literacy*. doi: 10.1177/1468798413491975

Pollard-Durodola, S. D., Gonzalez, J. E., Simmons, D. C., Kwok, O., Taylor, A. B., Davis, M. J., . . . Simmons, L. (2011). The effects of an intensive shared book-reading intervention for preschool children at risk for vocabulary delay. *Exceptional Children, 77*(2), 161-183.

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon, 9*(5), 1-6.

Prensky, M. (2011). Digital wisdom and homo sapiens digital. In M. Thomas (Ed), Deconstructing digital natives: Young people, technology and the new literacies. (pp. 15-29). New York: Routledge.

Prescott, O. (1965). *A father reads to his children: An anthology of prose and poetry*. New York: Dutton.

Reardon, S. F. (2013). The widening income achievement gap. *Educational Leadership, 70*(8), 10-16.

Rideout, V. (2014). *Learning at home: Families' educational media use in America*. U.S.A.: Joan Ganz Cooney Center.

Rideout, V. J., Vandewater, E. A., & Wartella, E. A. (2003). *Zero to six: Electronic media in the lives of infants, toddlers and preschoolers*. Menlo Park, CA: Henry J. Kaiser Family Foundation.

Robb, M. B. (2010). *New ways of reading: The impact of an interactive book on young children's story comprehension and parent-child dialogic reading behaviours.* Unpublished doctoral dissertation. University of California. Riverside, CA.

Robbins, C., & Ehri, L. C. (1994). Reading storybooks to kindergartners helps them learn new vocabulary words. *Journal of Educational Psychology, 86*(1), 54-64.

Rosenblatt, L. M. (1978). *The reader, the text, the poem: The transactional theory of the literary work.* Carbondale, Illinois: Southern Illinois University Press.

Roskos, K., Burstein, K., & You, B.-K. (2012). A typology for observing children's engagement with e-books at preschool. *Journal of Interactive Online Learning, 11*(2), 47-66.

Ruckus. (2013). *Shark goes to the doctor.* Retrieved from https://itunes.apple.com/au/app/seaworld-shark-goes-to-doctor/id797332702?mt=8

Saracho, O. N. (2007a). Fathers and young children's literacy experiences in a family environment. *Early Child Development and Care, 177*(4), 403-415. doi: 10.1080/03004430600563034

Saracho, O. N. (2007b). Hispanic father-child sociocultural literacy practices. *Journal of Hispanic Higher Education, 6*(3), 272-283. doi: 10.1177/1538192707302878

Saracho, O. N., & Spodek, B. (2010). Families' selection of children's literature books. *Early Childhood Education Journal, 37*(5), 401-409. doi: 10.1007/s10643-009-0365-5

Scholastic. (2012). *Kids and family reading report* (4th ed.). U.S.A.: Scholastic and Harrison Group.

Scholastic. (2015). *Kids and family reading report* (5th ed.). U.S.A.: Scholastic and Harrison Group.

Sénéchal, M. (2006). Testing the home literacy model: Parent involvement in kindergarten is differentially related to grade 4 reading comprehension, fluency, spelling, and reading for pleasure. *Scientific Studies of Reading*, *10*(1), 59-87. doi: 10.1207/s1532799xssr1001_4

Sénéchal, M., & Cornell, E. H. (1993). Vocabulary acquisition through shared reading experiences. *Reading Research Quarterly*, *28*(4), 360-374. doi: 10.2307/747933

Sénéchal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A five-year longitudinal study. *Child Development, 73*(2), 445-460.

Seuss, D. (2010). *Dr Seuss ABC.* Retrieved from https://itunes.apple.com/au/app/dr.-seusss-abc/id354855128?mt=8

Seuss, D. (2011). *There's a wocket in my pocket.* Retrieved from https://itunes.apple.com/au/app/theres-wocket-in-my-pocket!/id454620183?mt=8

Shamir, A., & Korat, O. (2015). Educational electronic books for supporting emergent literacy of kindergarteners at-risk for reading difficulties: What do we know so far? *Computers in the Schools, 32*(2), 105-121. doi: 10.1080/07380569.2015.1027868

Shamir, A., Korat, O., & Barbi, N. (2008). The effects of CD-ROM storybook reading on low SES kindergarteners' emergent literacy as a function of learning context. *Computers & Education, 51*(1), 354-367. doi: http://dx.doi.org/10.1016/j.compedu.2007.05.010

Shamir, A., Korat, O., & Fellah, R. (2012). Promoting vocabulary, phonological awareness and concept about print among children at risk for learning disability: Can e-books help? *Reading and Writing, 25*(1), 45.

Shanker, J. L., & Cockrum, W. A. (2009). *Locating and correcting reading difficulties* (9th ed.). Boston, MA: Pearson.

Smeets, D. J. H., & Bus, A. G. (2015). The interactive animated e-book as a word learning device for kindergartners. *Applied Psycholinguistics, 36*(4), 899.

Snow, C. E., Burns, S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Snow, C. E., & Juel, C. (2007). Teaching children to read: What do we know about how to do it? In M. J. Snowling & C. Hulme (Eds.), *The science of reading: A handbook (pp.*501-520). Malden, MA: Blackwell.

Snow, C., & Van Hemel, S. (Eds.). (2008). *Early childhood assessment: Why, what, and how*. Washington, D.C.: The National Academies Press.

Snowling, M. J., Stothard, S. E., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E.,. Hulme, C. (2012). *York assessment of reading for comprehension: Passage reading* (Australian ed.). London: GL Assessment.

Song, S., Su, M., Kang, C., Liu, H., Zhang, Y., McBride-Chang, C., ... & Shu, H. (2015). Tracing children's vocabulary development from preschool through the school-age years: an 8-year longitudinal study. *Developmental Science*, *18*(1), 119-131.

Stahl, S. A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research, 56*(1), 72-110. doi: 10.3102/00346543056001072

Stahl, S. A. & Miller, P. D. (2006). Whole language and language experience approaches to beginning reading: A quantitative research synthesis. In Stahl, K. A. D., & McKenna, M. C. (Eds.) *Reading research at work: Foundations of effective practice* (pp. 9-35). New York: The Guilford Press.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*(4), 360-407.

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38*(6), 934-947. doi: 10.1037//0022-0663.77.3.349

Takeuchi, L., & Stevens, R. (2011). *The new coviewing: Designing for learning through joint media engagement* (Fall ed.). New York: The Joan Ganz Cooney Center at Sesame Workshop and LIFE Center.

Thomson, S. & De Bortoli, L. (2012). *Preparing Australian students for the digital world: Results from the PISA 2009 digital reading literacy assessment*. Victoria: ACER. Retrieved from https://www.acer.edu.au/files/PISA2009_PreparingAustralianStudentsForTheDigitalWorld.pdf

Tiruchittampalam, S. (2014). *School years, summer holidays and the reading achievement gap.* (PhD), Massey University, Albany Campus, New Zealand. Retrieved from http://mro.massey.ac.nz/bitstream/handle/10179/6521/02_whole.pdf?sequence=2&isAllowed=y

Unsworth, L. (Ed.). (1993). *Literacy learning and teaching: Language as social practice in the primary school.* South Melbourne, VIC: Macmillan Education Australia.

Unsworth, L., & O'Toole, M. (1994). *Beginning reading with children's literature*. South Melbourne, VIC: Macmillan.

Uppstad, P.H., & Solheim, O. J. (2011). Code and comprehension in written language – Considering limitations to the Simple View of Reading. L1-Educational Studies in Language and Literature, 11, pp. 159-174.

Vaala, S., & Takeuchi, L. (2012). *Co-reading with children on iPads: Parents' perceptions and practices*. New York, NY: Joan Ganz Cooney Center.

Verenikina, I., & Kervin, L. (2011). iPads, digital play and pre-schoolers. *He Kupu, 2*(5). Retrieved from He Kupu website: http://www.hekupu.ac.nz/index.php?type=issue&issue=15

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin, 91*(3), 461-481. doi:10.1037/0033-2909.91.3.461

Whitehurst, G. J., & Lonigan, C. J. (2001). Emergent literacy: Development from prereaders to readers. *Handbook of early literacy research*, *1*, 11-29.

Whitehurst, G. J., Arnold, D. S., Epstein, J. N., Angell, A. L., Smith, M., & Fischel, J. E. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology 30*(5), 679-679.

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*(3), 848-872.

Williams, K. T. (2007). *EVT2: Expressive vocabulary test manual* (2nd ed.). Minneapolis, MN: Pearson.

Winch, G., Johnston, R., March, P., Ljungdahl, L., & Holliday, M. (2005). *Literacy: Reading, writing, and children's literature*. South Melbourne, VIC: Oxford University Press.

Wyse, D. & Goswami, U. (2008), Synthetic phonics and the teaching of reading. *British Educational Research Journal*, 34: 691–710. doi: 10.1080/01411920802268912

Woodside, A. (2010). *Case study research: Theory, methods and practice.* Bingley, UK: Emerald Publishing.

Woolley, G. (2011). *Reading comprehension: Assisting children with learning difficulties*. London, New York: Springer.

Yelland, N. J. (2010). Multiliteracies and learning in a new age. In J. Fletcher & F. Parkhill (Eds.), *Motivating literacy learners* (pp. 60-77). Auckland, NZ: New Zealand Reading Association.

Yelland, N. J. (2011). Knowledge building with ICT in the early years of schooling. *2*(5). Retrieved from *He Kupu* website: http://www.hekupu.ac.nz/index.php?page=144

Yelland, N.J. (2013). Technology and social inclusion: Rethinking the digital divide. In T. McKenna, M. Cacciattolo, & M. Vicars. (Eds.). *Engaging the disengaged* (pp 37 – 51). Melbourne: Cambridge University Press.

Yelland, N. J., Neal, G. & Dakich, E. (2008). *Rethinking education with ICT: New directions for effective practices*. Rotterdam, Netherlands: Sense Publishing.

Yin, R. K. (1994). *Case study research design and methods (2nd ed.).* Thousand Oaks, CA: Sage.

Zevenbergen, A., & Whitehurst, G. (2003). Dialogic reading: A shared picture book reading for preschoolers. In A. van Kleeck, S. A. Stahl, & E. B. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 170-191). Mahwah, NJ: Routledge.

Zevenbergen, R., & Logan, H. (2008). Computer use by preschool children: Rethinking practice as digital natives come to preschool. *Australian Journal of Early Childhood*, *33*(1), 37-44.

**Appendix A**

PARTICIPANT'S SCHOOL INFORMATION FORM

An investigation into families' use of electronic and traditional texts:

Effects on early reading acquisition.


Dear [insert principal's name],

Your school has been invited to participate in a research study into the shared home reading experiences of families with three to seven year old children. The study is being conducted in partial fulfilment of a PhD for Katrina McNab under the supervision of Associate Professor Ruth Fielding-Barnsley and Professor Ian Hay.

The purpose of this study is to investigate the traditional and new electronic book reading practices of families with young children and the effects of these practices on children's early reading development. Evidence from previous studies suggests that young children's home lives are becoming increasingly shaped by new technologies as the electronic media market continues to grow. However, ownership of new technologies has been shown to differ by families' income level, particularly with regard to newer and more expensive devices. Ownership of new technologies increases with higher household incomes, with families from lower income and ethnic minority households less likely to own portable digital media devices. Very little is known about the effects of these new technologies on children's early literacy development.

The study will focus on a primary school aiming to address the digital divide by implementing 1:1 iPads into the school curriculum and a statistically similar school not currently implementing 1:1 iPads. The study will aim to investigate the process of electronic shared book reading with families and their 3 to 7 year old children. The study will also aim to investigate the relative effectiveness of traditional and electronic shared reading practices

in developing three components of the learning to read process: concepts about print, phonological awareness, and vocabulary development. This study will address the following questions that are based on three elements: parent and child reading behaviours, impact on early literacy development, and parents' perceptions of iPads in literacy education:

1. Are parents using electronic books as a shared reading device with young children?
2. How are parents using electronic and traditional books with their children?
3. What are the effects of reading electronic texts on young children's early literacy development and does this differ from traditional reading practices?
4. What are the most effective ways for parents to engage their children in electronic books and reading that promotes literacy development?
5. What are parents' perceptions regarding iPads in literacy education?

The study will progress in three distinct phases. The aim of the first phase of the study is to capture a picture of the traditional and new reading practices of families and their young children, particularly the technologies families from schools with low ICSEA values are using to engage their children in reading books, and families perceptions of iPads in literacy education. The first phase survey will provide quantitative baseline data for the second and third phases of the study.

The aim of the second phase of the study is to implement a shared reading intervention and investigate parent and child shared reading behaviours, and analyse and compare the impacts of families' traditional and electronic shared reading practices on young children's early literacy development. The participants will not receive any specific training for the second phase of the study, however, they will be provided with specific electronic or traditional texts.

The aim of the third phase of the study is to implement a second reading intervention, with training if required, and reassess the demographic and family literacy information and the parent and child shared reading behaviours. A shared reading training programme will be offered to parents if analysis of the data from the second phase of the study suggests that families would benefit from this. The aim of the training is to empower families to teach their children specific literacy skills that promote literacy development. Data from this phase

of the study will be analysed and compared to data from the first and second phases of the study to determine whether training families to teach specific literacy skills to their children impacts on parent and child reading practices, behaviours and perceptions, and children's literacy development. The third phase also aims to investigate whether both traditional and electronic reading shared reading models can support literacy development that is retained over time. It is anticipated that participants who choose to continue with the second and third phase will be involved in the study for 18 months.

Your school is eligible to participate in this study because you are implementing a 1:1 iPad programme. If you decide to participate, the study procedures will involve the following. You will need to complete the attached consent form and return it to the researcher in the stamped, self-addressed envelope provided. Participant information sheets, consent forms and surveys will be provided for you to distribute to all parents and primary carers of children in Pre-Kinder to Grade 2. A parent information session is an optional inclusion to the study. The information session would provide the researcher with an opportunity to discuss the risks and benefits of the study with potential participants and answer questions regarding the research. The session would be held at a time that is convenient to your school community. Parents and primary carers who choose to participate in the research will have the option of either returning the completed consent forms at the parent information session, to the school office for collection, or mailing to the researcher in the self-addressed envelopes provided. Families in your school will be allocated to the electronic shared reading experimental group. This group will be provided with electronic children's books to be read on a school provided iPad. The control group will receive traditional children's books. Each group will be involved in shared reading interventions. The researcher will assess the children's literacy development at the beginning of each of the six-week shared reading experiences and again at the completion of each of the interventions. It is anticipated that these assessments will take approximately 45 minutes to complete. We want all children to feel comfortable during the assessments; therefore, parents will be invited to be with their children during this time. Alternatively, parents may choose to give permission for one of the teachers at your school to be with them. At the end of each of the interventions, parents will be given an opportunity to discuss their family's shared reading experience during an interview with the researcher. We will video parents reading with their child at this time. The interview and videotaped reading experience will be held at your school at a time that is convenient to both the school and the

participants. Prior to the second shared reading intervention, the researcher may offer the participants a shared reading training programme at your school. The researcher will require access to a room that is suitable for conducting the pre and post intervention interviews and assessments. The school will receive a copy of each of the participating students' literacy assessments as soon as the data has been analysed, and a copy of the research report at the completion of the study.

We would like to be able to link your students' literacy assessments from this study with the literacy assessment results from your school to assess students' literacy development. We are particularly interested in PIPS assessment data and Deep Dip assessment data. Students' anonymity will be protected. The researcher will remove students' names from the assessment data and replace it with a code. Students' names will not appear in any of the published findings. Providing us with access to PIPS and Deep Dip data is optional and your consent, and the consent of parents, is required for the researcher to access this information.

It is important that you understand that your involvement in this study is voluntary. While we would be pleased to have you participate, we respect your right to decline. There will be no consequences to you if you decide not to participate. If you decide to discontinue participation at any time, you may do so without providing an explanation. All information will be treated in a confidential manner, and individual participants names will not be used in any publication arising out of the research. Participants' addresses will not be sought. All research data will be kept in a locked cabinet in an office at the University of Tasmania, Launceston. Data will be retained for the length of the study and returned to individual participants if requested. The digital interview recordings will be deleted after the transcriptions have been member checked. The video-taped shared reading sessions and remaining hard copy data will be kept for 5 years and then all documents will be shredded and videotapes will be destroyed.

The results of this study may be used to inform parents, teachers, schools, curriculum developers and researchers about the electronic book reading experiences of young children living in Tasmania. The effects of these new technologies on children's early reading development will be of particular interest, as very little research in this area is currently available.

This study is designed to provide valuable information about addressing educational inequity and bridging the digital divide by assisting parents to engage their children in shared reading practices that promote a love of reading and early literacy development. The child participants may experience improvements in their literacy skills, and parents will be provided with comprehensive information regarding their child's literacy development. Adult participants will receive advice and training in the most effective ways to promote their child's literacy development during the third phase of the study. Although previous research has demonstrated that parental involvement has a positive effect on early reading acquisition, the types of involvement have been shown to vary in their effectiveness. The proposed study will represent one of the first studies to investigate the ways in which parents engage their children in reading electronic texts on an iPad and the effects of these types of involvement on young children's early literacy development. The findings from this study have the potential to positively impact the lives of the adult and child participants and the home and school literacy partnerships.

There are no specific risks anticipated with participation in this study.

If you would like to discuss any aspect of this study please feel free to contact either:

Associate Professor Ruth Fielding-Barnsley
Ph.: 03 63243712
Email: Ruth.Fielding-Barnsley@utas.edu.au

Professor Ian Hay
Ph: 03 63 243144
Email: Ian.Hay@utas.edu.au

Katrina McNab
Ph. 03 6427 3224
Email: kfmcnab@utas.edu.au

We would be happy to discuss any aspect of the research with you. Once we have analysed the information we will be mailing a summary of our findings to the participating schools. You are welcome to contact us at that time to discuss any issue relating to the research study.

This study has been approved by the Tasmanian Social Science Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study you should contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. You will need to quote H12006.

Thank you for taking the time to consider this study. If you wish to take part in it, please sign the attached consent form and return it to either the school or by mail in the stamped, self-addressed envelope provided.

This information sheet is for you to keep.

Associate Professor Ruth Fielding-Barnsley

Professor Ian Hay

Katrina McNab

**Appendix B**

PRINCIPAL'S CONSENT FORM

An investigation into families' use of electronic and traditional texts:

Effects on early reading acquisition.


1. I have read and understood the `Principal Information Sheet' and `Participant Information sheet' and `Participant Consent Form' for this project.

2. The nature and possible effects of the study have been explained to me.

3. I understand that the following points would be adhered to in the study: The study involves reading and signing the consent form and mailing it to the researcher in the stamped, self-addressed envelope provided. I have been provided with the Supervisors' and the Researcher's contact details and encouraged to contact the researcher regarding questions about the study. The researcher will conduct an information session at the school at my request. The information session would include a discussion of the risks and benefits of the study and answer questions regarding the research. My school will be responsible for distributing the information sheets, consent forms and surveys to all families with children enrolled in pre-kinder to grade 2. The study will proceed in three distinct phases and families may choose to participate only in the First Phase. All literacy assessment data collection and interviews will be undertaken at the school and I agree to provide a suitable room for this purpose. Student participants will be involved in literacy assessments that will take approximately 45 mins each. Parents will be invited to be with their children during this time. Alternatively, parents may consent to a teacher accompanying their child. The researcher will provide the school with information about my students' literacy development. Participants may be involved in the study for a period not exceeding 18 months. The school will receive a report at the completion of the study and I will be able to access a report of the study on the Faculty of Education's Research website.

http://www.educ.utas.edu.au/Research/

4. I understand that participation involves the risk that participants in the study may experience some discomfort during completion of the survey, videotaped shared reading time with their children, and their interviews with the researcher and that if this occurs they have the right to refuse to answer a question or withdraw from the study.

5. I understand that all research data will be securely stored on the University of Tasmania premises for five years, and will then be destroyed.

6. Any questions that I have asked have been answered to my satisfaction.

7. I agree that research data gathered from the school for the study may be published provided that individual participants cannot be identified.

8. I understand that the researcher will maintain the participants' identity confidential and that any information I supply to the researcher will be used only for the purposes of the research.

9. I agree to participate in this investigation and understand that the school may withdraw at any time without any effect, and if I so wish may request that any data I have supplied to date be withdrawn from the research.

10. I agree to provide the researcher with participants' PIPS and Deep Dip assessment results if parental consent is obtained. I understand that the release of this data is optional and I have the right to deny the researcher access. *Please indicate your agreement by circling your option and signing your name.*

Yes I agree_____

No I do not agree_____

Name of Participant:

Signature: Date:

Statement by Investigator

I have explained the project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of investigator

Signature of investigator

Date

**Appendix C**

PARTICIPANT'S INFORMATION FORM

An investigation into families' use of electronic and traditional texts:

Effects on early reading acquisition.


Dear Parent/Carer,

Your school has been invited to participate in the second and third stage of a research study into the shared home reading experiences of families with three to seven year old children. The study is being conducted in partial fulfillment of a PhD for Katrina McNab under the supervision of Associate Professor Ruth Fielding Barnsley and Professor Ian Hay.

The purpose of this study is to investigate the traditional and new electronic book reading practices of families with young children and the effects of these practices on children's early reading development. Evidence from previous studies suggests that young children's home lives are becoming increasingly shaped by new technologies as the electronic media market continues to grow. Very little is known about the effects of these new technologies on children's early reading development. Participants being invited to take part in this study include parents and primary carers of children in the early years of school.

You are eligible to participate in this study because you are a parent or primary carer of an early childhood student and your school has agreed to participate in the study. If you decide to participate, the study procedures will involve the following. You will need to complete the attached consent form and return it to either the school office for collection or mail it in the stamped, self-addressed envelope provided. If you are selected to participate in the second stage of the study, you will be allocated to one of two intervention groups. One group will be provided with electronic children's books to be

read on an iPad and the other group will be provided with traditional children's books. Each group will be involved in two six-week shared reading interventions.

During the six-week periods you will be able to share the books with your child and read them as often as you wish. You will also be required to complete a short 10 question online survey for each of the provided books you read. The researcher will assess your child's literacy development at the beginning of each of the six-week shared reading experiences and again at the completion of each of the interventions. It is anticipated that these assessments will take approximately 45 minutes to complete.

During the assessments, your child will be shown some pictures and alphabet letters and asked to name them and we will ask your child about the sounds they hear in words. We want your child to feel comfortable during the assessments; therefore, you will be invited to be with your child during this time. Alternatively, you may choose to give permission for one of the teachers at your school to be with them. We are interested in finding out how families are using traditional and electronic books with their children. At the end of each of the six week interventions, you will be given an opportunity to discuss your family's shared reading experience during an interview with the researcher. We will record your interview on a voice recorder. You will be given a transcription of the interview at a later date and asked to confirm whether it provides a true and accurate reflection of what you have discussed. We will also video you reading with your child at this time. We would like the shared reading video experience to be as natural as possible. You will be asked to share a book with your child in the same way you have been reading together at home. The book will be of the books that you have previously shared with your child during the six week intervention. If at any time you or your child feels uncomfortable, you can ask the researcher to stop the recording. The researcher will analyse the video recordings to discover how families are using traditional and electronic books with their children.

Your interview and videotaped reading experience will be held at your child's school at a time that is convenient to you. The researcher will provide you with information about your child's early literacy development. Prior to the second shared reading intervention, the researcher may provide you with advice and information about helping your child develop early literacy skills. You will be invited to receive this assistance at a sharing

and information session at your child's school, prior to the second shared reading intervention. The school will receive a copy of your child's literacy assessments as soon as the data has been analysed and a copy of the research report at the completion of the study. You will have access to the study report on the Faculty of Education's Research website http://www.educ.utas.edu.au/Research/

We would like to be able to link your child's literacy assessments from this study with the literacy assessment results from your child's school. We are particularly interested in your child's PIPS assessment data that was collected in Prep and Deep Dip assessment data if your child has been using an iPad at school. The PIPS and Deep Dip assessment information will be added to the assessment information and used to assess your child's literacy development. Your child's anonymity will be protected. The researcher will remove your child's name from the assessment data and replace it with a code. Your child's name will not appear in any of the published findings. The release of your child's PIPS and Deep Dip data is optional and your consent, on the consent form, is required for the researcher to access this information.

It is important that you understand that your involvement in this study is voluntary. While we would be pleased to have you participate, we respect your right to decline. There will be no consequences to you if you decide not to participate. If you decide to discontinue participation at any time, you may do so without providing an explanation.

All information will be treated in a confidential manner, and your name will not be used in any publication arising out of the research. This letter has been sent to you by the school. The researchers do not have access to your personal information and your address will not be sought. All research data will be kept in a locked cabinet in an office at the University of Tasmania, Launceston. Data will be retained for the length of the study and returned to individual participants if requested. The digital interview recordings will be deleted after the transcriptions have been member checked. The video-taped shared reading sessions and remaining hard copy data will be kept for 5 years and then all documents will be shredded and videotapes will be destroyed.

The results of this study may be used to inform parents, teachers, schools, curriculum developers and researchers about the electronic book reading experiences of young children living in Tasmania. The effects of these new technologies on children's early

reading development will be of particular interest, as very little research in this area is currently available.

There are no specific risks anticipated with participation in this study. If you would like to discuss any aspect of this study please feel free to contact either:

Associate Professor Ruth Fielding-Barnsley Ph: 03 63 243712 Email: Ruth.FieldingFBarnsley@utas.edu.au

Professor Ian Hay Ph: 03 63 243144 Email: Ian.Hay@utas.edu.au

Katrina McNab Email: kfmcnab@utas.edu.au

We would be happy to discuss any aspect of the research with you. Once we have analysed the information we will be mailing a summary of our findings to the school. You are welcome to contact us at that time to discuss any issue relating to the research study.

This study has been approved by the Tasmanian Social Science Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study you should contact the Executive Officer of the HREC Tasmania Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. You will need to quote H21006.

Thank you for taking the time to consider this study. If you wish to take part in it, please sign the attached consent form and return it to either the school or by mail in the stamped, self-addressed envelope provided. This information sheet is for you to keep.

Associate Professor Ruth Fielding-Barnsley

Professor Ian Hay

Katrina McNab

Statement by Investigator

I have explained the project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation. If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

_____The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of investigator: Katrina McNab

Signature of investigator _____

Date_____

Your name (optional) _____ Date_____

**Appendix D**

PARTICIPANT'S CONSENT FORM

An investigation into families' use of electronic and traditional texts:

Effects on early reading acquisition.


1. I have read and understood the 'Information Sheet' for this project.

2. The nature and possible effects of the study have been explained to me.

3. I understand that the study involves the following: Reading and signing the consent form and returning it to the school office for collection or mailing to the researcher in the stamped, self-addressed envelopes provided. I have been provided with the Supervisors' and the Researcher's contact details and encouraged to contact the researcher regarding questions about the study. My child will be involved in literacy assessments that will take approximately 45 mins at the beginning of the two six-week interventions and this will be repeated again at the end of the two six-week periods. I can choose to be present for the literacy assessments or I can give permission for a teacher, to be present. I will be interviewed at the end of the six-week reading interventions. My interview, videotaped shared reading experience and my child's literacy assessment will take approximately 75 mins to complete. The interview will be digitally recorded and transcribed. I will be provided with an opportunity to view the interview transcript and confirm that it is accurate.

I will complete a short survey for each of the provided books I read with my child. The researcher will provide me with information about my child's literacy development. The school will receive a report at the completion of the study and I will be able to access a report of the study on the Faculty of Education's Research website: http://www.educ.utas.edu.au/Research/

4. I understand that participation involves the risk that I may experience some discomfort during completion of the survey, videotaped shared reading time with my child, and my

interview with the researcher and that if this occurs I have the right to refuse to answer a question, stop the recording, or withdraw from the study.

5. I understand that all research data will be securely stored on the University of Tasmania premises for five years, and will then be destroyed.

6. Any questions that I have asked have been answered to my satisfaction.

7. I agree that all research data gathered for the study may be published provided that I cannot be identified as a participant.

8. I understand that the researcher will maintain my identity confidential and that any information I supply to the researcher will be used only for the purposes of the research.

9. I agree to participate in this investigation and understand that I may withdraw at any time without any effect, and if I so wish may request that any data I have supplied to date be withdrawn from the research.

10. I give permission for my child _____ (please insert child's name) to participate in this investigation. I understand that my child has the right to refuse to participate in any stage of the study and can withdraw at any time without any effect. If I so wish, I may request that any of my child's data be withdrawn from the research.

11. I understand that the study involves a videotaped shared reading experience. Please indicate your agreement by circling your yes/no option and signing your name.

**Yes**, I agree for myself and my child to be videotaped as we share a book together.

_____ (signature)

**No**, I do not agree for myself and my child to be videotaped as we share a book together.

_____ (signature)

12. I give permission for the school and the Tasmanian Department of Education to release my child's PIPS and Deep Dip assessment results to the researcher. I understand that this is optional and I have the right to deny the researcher access. Please indicate your agreement by circling your yes/no option and signing your name.

**Yes**, I agree to the Department of Education releasing my child's PIPS and Deep Dip assessment data to the researcher.

_____ (signature)

**No,** I do not agree to the Department of Education releasing my child's PIPS and Deep Dip assessment data to the researcher.

_____ (signature)

13. I give permission for the researcher to provide my child's literacy assessment results to the school. I understand that this is optional. Please indicate by circling your yes/no option and signing your name.

**Yes,** I agree to the researchers providing my child's literacy assessment results to my child's school.

_____ (signature)

**No,** I do not agree to the researchers providing my child's literacy assessment results to my child's school.

_____ (signature)

Name of Participant:

Signature: Date:

Statement by Investigator

I have explained the project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

_____The participant has received the Information Sheet where my details have been provided so participants have the opportunity to contact me prior to consenting to participate in this project.

Name of investigator

Signature of investigator Date

**Appendix E**

**Participant # _____Date_____**

**Phase 3: Proposed Interview Questions**

Please think about how often your child asked to be read to before you started the intervention and compare that with how often they asked to be read to during the past six weeks. Has this changed and, if so, why do you think it has changed?

What have you enjoyed most about reading electronic books with your child?

What have you found difficult about reading electronic books with your child?

**Please describe what usually happens when you share a story on the iPad with your child.** For example: Do you discuss the story before, during or after the book is read? What do you usually do if your child asks a question about the book or wants to talk about something connected with the book? Do you discuss it or try to keep them on the task of reading the book? Do you read, does your child read, do you listen to the narration or record and listen to your own narration? Did you or your child ever access the dictionary app or the dictionary feature in a book? Were the interactive features in the books distracting or did they improve your child's engagement with the book? Do you talk about the books or use new vocabulary from the books in your everyday conversations? Do you take turns reading the text? Do you discuss the punctuation, letters, sounds or words?

Of the eight books you were given for this intervention, what was your favourite and why?

Of the eight books you were given for this intervention, what was your child's favourite and why?

What do you believe your child enjoys about reading electronic books?

What do you believe your child does not like about reading electronic books?

Did you access the presentations in the KEYNOTE app on the iPad?

Did you find the presentations in KEYNOTE useful? How could these be improved?

Did you find the drop in sessions at the school and community centre helpful? What did you like or dislike about these sessions and why? How could these be improved?

Has the way you experience books with your child changed during the eight weeks you had the iPad? Can you please explain why and how it has changed or remained the same?

Has the way your child experiences books independently changed since you had the iPad at home? Can you explain how it has changed?

Did other members of your family use the iPad and, if so, has this been a positive or negative experience?

Do you believe that using an iPad at home is helping your child learn and, if so, how is it helping?

Do you believe that using an iPad at home is harmful to your child's learning and, if so, how is it harmful?

Has your opinion about iPads in education changed since your child started using the iPad at home? How has it changed and why?

Can you suggest ways in which the school could assist you to support your child's literacy learning with iPads if they were introduced in your child's grade?

Is there anything else you would like to discuss in relation to your child's reading development, iPads in education, or this study?

**Appendix F**

Family Literacy, Media and Demographic Survey
Phase 2 Reading Questionnaire: Term 2

This survey is part of a study about the traditional and new electronic reading practices of families with young children. Remember you always have the option to choose not to answer a question.

1. What is your relationship to the child in the survey?

| Mother | Father | Grand mother | Grand father | Aunt | Uncle | Other (Please indicate) |
|---|---|---|---|---|---|---|
| | | | | | | |

2. Who usually reads to your child at home?

| Mother | Father | Grand mother | Grand father | Aunt | Uncle | Other (Please indicate) |
|---|---|---|---|---|---|---|
| | | | | | | |

3. How much school did you complete?

| Did not complete High School | High School | College/ Vocational School | Bachelor's Degree | Advanced Degree |
|---|---|---|---|---|
| | | | | |

4. Is your child a boy or a girl? _____

5. Time you spent reading a paper book to your child on a typical recent day

| Tick from the following | |
|---|---|
| No Reading | |
| Yes Reading | |
| 5 Minutes | |
| 15 Minutes | |
| 30 Minutes | |
| 45 Minutes | |
| 1 Hour | |

| | |
|---|---|
| 1 ½ Hours | |
| Other | |
| Do Not Know | |

6. Time your child spends reading a paper book on a typical recent day

| Tick from the following | |
|---|---|
| No Reading | |
| Yes Reading | |
| 5 Minutes | |
| 15 Minutes | |
| 30 Minutes | |
| 45 Minutes | |
| 1 Hour | |
| 1 ½ Hours | |
| Other | |
| Do Not Know | |

Electronic books refer to books viewed on electronic devices such as DVD players, Tablet devices, e-Readers, iPods, iPhones, and iPads.

7. Time you spent reading or looking at an electronic books with your child on a typical recent day

| Tick from the following | |
|---|---|
| NO Reading | |
| Yes Reading | |
| 5 Minutes | |
| 15 Minutes | |
| 30 Minutes | |
| 45 Minutes | |
| 1 Hour | |
| 1 ½ Hours | |
| Other | |
| Do Not Know | |

8. Time your child spent reading or looking at an electronic books on a typical recent day

| Tick from the following | |
|---|---|
| No Reading | |
| Yes Reading | |
| 5 Minutes | |
| 15 Minutes | |
| 30 Minutes | |
| 45 Minutes | |
| 1 Hour | |
| 1 ½ Hours | |
| Other | |
| Do Not Know | |

9. How often do you, or other members of your family, read a book to your child in a typical week?

| Tick from the following | |
|---|---|
| No Reading | |
| 1 times | |
| 2 times | |
| 3 times | |
| 4 times | |
| 5 times | |
| 6 times | |
| 7 times | |
| Other please state | |
| | |

10. How often do you, or other members of your family, read an e- book to your child in a typical week?

| Tick from the following | |
|---|---|
| No Reading | |
| 1 times | |
| 2 times | |
| 3 times | |
| 4 times | |
| 5 times | |
| 6 times | |
| 7 times | |
| Other please state | |

11. Please list any electronic book readers, you own.

12. What electronic book reader, does your child use the most?

13**.** Please list one or two of your child's favourite paper books.

14**.** Please list one or two of your child's favourite electronic books.

15. Do you think reading the following types of books helps your child's learning? Tick one from above for each part of the question.

| | Mostly helps | No much help | Does not help | Do not Know |
|---|---|---|---|---|
| Paper based books | | | | |
| Electronic books | | | | |

16. What effect will using an iPad have on your child's learning? Tick one from above for each part of the question.

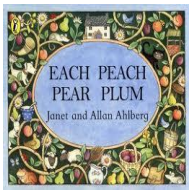
| | Positive effect | Not much effect | Negative effect | Don't know |
|---|---|---|---|---|
| iPad at school | | | | |
| iPad at home | | | | |

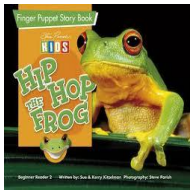
Your name (optional) _____ Date_____

**Appendix G**

Visual Calendar Reminder for Phase Two Participants

**An investigation into families' use of electronic and traditional texts: Effects on early reading acquisition**




You and your child are free to read the four books as often as you wish. There are no requirements regarding the minimum or maximum number of readings during the six-week intervention. Please ensure that you record how and how often your child read each book on the tick sheets provided. Thank you for your participation.

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| July 8 | 9 | 10 Pre-intervention literacy assessments | 11 Pre-intervention literacy assessments | 12 | 13 | 14 |
| 15 **Week 1 Day 1** of reading ebooks at home | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 **Week 2** | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 **Week 3** | 30 | 31 | August 1 | 2 | 3 | 4 |
| 5 **Week 4** | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 **Week 5** | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 **Week 6** | 20 | 21 | 22 | 23 | 24 | 25 **Last Day** |
| 26 | 27 | 28 Post - Intervention literacy assessments | 29 Post - Intervention literacy assessments | 30 | 31 | |

Images from: iappfind.com; natureconnectshop.com; jillsbooks.wordpress.com

CRICOS 00586B

## Appendix H

Engagement

Coding Definitions and Rules: Reading Behaviours

| Category | Criteria | Salient Behaviour(s) | Definition | Adult T1-T5 | | | | | Child T1-T5 | | | | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control | Power to take meaningful action and to see the results of decisions and choices (Murray, 1997) | Operating the device | Opens book on iPad. Quick easy access to and use of control buttons on the device and within the apps. | | | | | | | | | | | |
| | | Operating the device | Chooses and selects a narration mode Quick easy access to and use of control buttons on the device and within the apps | | | | | | | | | | | |
| | | Operating the device/ Language | Records own narration. Uses speech to create own narration | | | | | | | | | | | |
| | | Operating the device /Listening | Listens to own narration. Attends to the audio recording, not talking | | | | | | | | | | | |
| | | Touching/Seeing/ Hearing/ Manipulating | Attends to hotspots/animations embedded in illustrations. Fingers applied directly to the screen. | | | | | | | | | | | |
| | | Touching/ Seeing/ Hearing/ Manipulating | Attends to games included in the e-book | | | | | | | | | | | |
| | | Touching | Swipes or presses arrow to turn pages | | | | | | | | | | | |
| | | Touching/ Manipulating/ Seeing/Creating | Attends to paint mode and selects own pictures | | | | | | | | | | | |
| Multisensory Behaviours | Using visual, auditory and | Looking | Eyes directed to the screen | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | haptic-kinaesthetic senses | | | | | | | | | | | | | |
| | | Touching | Fingers applied directly to the screen | | | | | | | | | | | |
| | | Listening | Attending to the audio or narrator of the eBook, not talking | | | | | | | | | | | |
| | | Moving | Positioning to view the screen | | | | | | | | | | | |
| | | Moving | Relaxed positioning | | | | | | | | | | | |
| | | Gesturing | Using bodily actions to communicate | | | | | | | | | | | |
| Communication | Using verbal and nonverbal to respond to others | Facial Expressions | Using facial gestures to express thought and feelings | | | | | | | | | | | |
| | | Making Noises | Using sounds to express thought and feelings, such as squealing, laughing, gasping, etc. | | | | | | | | | | | |
| | | Language | Using speech to comment, answer questions and ask questions | | | | | | | | | | | |

## Appendix I

# Dialogic Reading Behaviours

Coding Definitions, Behaviours and Tallies

| Category | Criteria | Salient Behaviour/s | Adult Behaviour | Child Behaviour | Adult Tally T1-T5 | | | | | Child Tally T1-T5 | | | | | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Print Awareness | Using verbal and nonverbal behaviours to question, respond to others | Language | Asks child to locate book parts (front, back, bottom, top, or spine) | Identifies book parts (front, back, bottom or top) | | | | | | | | | | | |
| | | Language | Discusses title | Responds to discussion | | | | | | | | | | | |
| | | Language | Discusses Author | Responds to discussion | | | | | | | | | | | |
| | | Language | Discusses new words | Discusses new words | | | | | | | | | | | |
| | | Language | Asks child where you begin to read the story | Identifies where the story begins | | | | | | | | | | | |
| | | Language | Asks child to identify a letter or a word | Identifies a letter or a word | | | | | | | | | | | |
| | | Language/ Gesturing | Directs child's attention to punctuation | Identifies punctuation | | | | | | | | | | | |
| Support Comprehension/ Vocabulary | Using verbal and nonverbal behaviours to question, respond to others | Language | Requests predictions about the story | Makes predictions about the story | | | | | | | | | | | |
| | | Language | Asks closed questions | Responds to questions | | | | | | | | | | | |
| | | Language | Asks open-ended questions | Responds to questions | | | | | | | | | | | |
| | | Language | Elaborates understandings | Responds to elaborations | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Language | Responds to elaborations | Elaborates understandings Responds to elaborations | | | | | | | | | | | |
| | | Gesturing/ Language | Points to pictures or words | Responds to parent's picture or word cues or identifies cues on his or her own | | | | | | | | | | | |
| | | Language/ Gesturing | Prompts child to touch the screen to hear new or unfamiliar words | Touches words or pictures on the screen to hear new or unfamiliar words | | | | | | | | | | | |
| | | Language/ Gesturing | Prompts child to tap screen to hear definition of a word | Taps screen to hear definition of a word | | | | | | | | | | | |
| | | Language | Asks child to recall information from the book/story | Recalls information from the book/story | | | | | | | | | | | |
| | | Language | Pauses to answer child's questions | Asks questions | | | | | | | | | | | |
| | | Language | Elaborates on or rephrases child's ideas | Spontaneously offers ideas about the story | | | | | | | | | | | |
| | | Language | Relates the story to real life or own experiences | Relates story to real life or own experiences | | | | | | | | | | | |
| Phonological Awareness | | Language | Calls child's attention to rhyming words in the story | Identifies rhyming words in the story | | | | | | | | | | | |
| | | Language | Directs child's attention to syllables in words | Recognises that words are made up of syllables | | | | | | | | | | | |
| | | Language | Directs child's attention to initial sounds in words (onset) | Identifies initial sounds in words | | | | | | | | | | | |
| | | Language | Directs child's attention to ending sounds | Identifies ending sounds in words | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | in words (rime) | | | | | | | | | | | | |
| | | Language/ Gesturing | Directs child's attention to repeated words or phrases | Tries to repeat the common words or phrases | | | | | | | | | | | |
| | | Language/ Gesturing | Prompts child to double tap screen to hear a word sounded out | Double taps screen to hear a word sounded out | | | | | | | | | | | |
| Attention to Text | | Moving | Has child sitting close | Sits close to parent | | | | | | | | | | | |
| | | Language | Uses storytelling voice/animation | Responds to parents voice by smiling, gesturing, or paying close attention | | | | | | | | | | | |
| | | Gesturing/ Language | Directs child's attention to punctuation | | | | | | | | | | | | |
| | | Facial Expressions /Gesturing | Responds to child's reading by smiling, gesturing, or paying close attention | Uses storytelling voice/animation | | | | | | | | | | | |
| | | Language/ Gesturing | Redirects child's attention to the book or keeps child engaged in the story | Redirects or maintains his or her attention to the text. | | | | | | | | | | | |
| | | Moving/ Gesturing/ Language | Gives child opportunity to hold book, touch book, or turn pages | Holds book or turns pages on his or her own, or when directed | | | | | | | | | | | |

Adapted from Dixon-Krauss, Januszka, and Chae (2010), Clay (2007) and Chiong, Ree, Takeuchi, and Erickson (2012). Roskos, Burstein, and You (2012)

Reference List

Chiong, C., Ree, J., Takeuchi, L., & Erickson, I. (2012). Print books vs. e-books: Comparing parent-child co-reading on print, basic, and enhanced e-book platforms (Spring 2012 ed., pp. 5). New York: NY: Joan Ganz Cooney Center.

Clay, M. M. (2007). *Concepts about print: What have children learned about the way we print language?* Auckland, NZ: Heinemann.

Dixon-Krauss, L., Januszka, C. M., & Chae, C.-H. (2010). Development of the dialogic reading inventory of parent-child book reading. *Journal of Research in Childhood Education, 24*(3), 266-277. doi: 10.1080/02568543.2010.487412

## Appendix J

Reading Questionnaire

Book: The **Fantastic Flying Books of Mr Morris Lessmore.** Name _____ Date _____

**An investigation into families' use of electronic and traditional texts: effects on early reading acquisition.** This questionnaire is part of a research study about the shared reading practices of families with 3 to 7 year old children. You and your child have been selected to participate in the group reading eBooks on iPads. Please refer to this sheet each time your child engages with *The Fantastic Flying Books of Mr Morris Lessmore* and tick the appropriate boxes. The stars in the last two questions represent enjoyment. 1 star represents a not very enjoyable experience and 5 stars represent a very enjoyable experience. Please shade the number of stars to indicate your perception of the experience.

**Week 1**

| | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** | **Day 6** | **Day 7** |
|---|---|---|---|---|---|---|---|
| Child asked to read or instigated the reading. | | | | | | | |
| Adult or another child instigated the reading. (Please indicate who) | | | | | | | |
| How long did the child read/share the book for? (Minutes) | | | | | | | |
| Did you read/share the book with the child? | | | | | | | |
| Did the child read/experience the book independently? | | | | | | | |
| How enjoyable was the experience for the child? 1-5 | | | | | | | |
| How enjoyable was the experience for the adult? 1-5 | | | | | | | |

**Week 2**

| | **Day 8** | **Day 9** | **Day 10** | **Day 11** | **Day 12** | **Day 13** | **Day 14** |
|---|---|---|---|---|---|---|---|
| Child asked to read or instigated the reading. | | | | | | | |
| Adult or another child instigated the reading. (Please indicate who) | | | | | | | |
| How long did the child read/share the book for? (Minutes) | | | | | | | |
| Did you read/share the book with the child? | | | | | | | |
| Did the child read/experience the book independently? | | | | | | | |
| How enjoyable was the experience for the child? | | | | | | | |
| How enjoyable was the experience for the adult? | | | | | | | |

**Week 3**

| | **Day 15** | **Day 16** | **Day 17** | **Day 18** | **Day 19** | **Day 20** | **Day 21** |
|---|---|---|---|---|---|---|---|
| Child asked to read or instigated the reading. | | | | | | | |
| Adult or another child instigated the reading. (Please indicate who) | | | | | | | |
| How long did the child read/share the book for? (Minutes) | | | | | | | |
| Did you read/share the book with the child? | | | | | | | |
| Did the child read/experience the book independently? | | | | | | | |
| How enjoyable was the experience for the child? | | | | | | | |
| How enjoyable was the experience for the adult? | | | | | | | |